
UNITED STATES SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

FORM 10-K

(Mark one)

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended July 27, 2019

or

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from ____ to ____

Commission file number 0-18225



CISCO SYSTEMS, INC.

(Exact name of Registrant as specified in its charter)

California
(State or other jurisdiction of
incorporation or organization)
170 West Tasman Drive
San Jose, California
(Address of principal executive offices)

77-0059951
(IRS Employer
Identification No.)
95134-1706
(Zip Code)

Registrant's telephone number, including area code: **(408) 526-4000**
Securities registered pursuant to Section 12(b) of the Act:

<u>Title of Each Class:</u>	<u>Trading Symbol(s)</u>	<u>Name of Each Exchange on which Registered</u>
Common Stock, par value \$0.001 per share	CSCO	The Nasdaq Stock Market LLC

Securities registered pursuant to Section 12(g) of the Act: **None**

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer Accelerated filer

Non-accelerated filer (Do not check if a smaller reporting company) Smaller reporting company

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes No

Aggregate market value of registrant's common stock held by non-affiliates of the registrant, based upon the closing price of a share of the registrant's common stock on January 25, 2019 as reported by the Nasdaq Global Select Market on that date: \$204.0 billion

Number of shares of the registrant's common stock outstanding as of August 30, 2019: 4,245,290,230

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement relating to the registrant's 2019 Annual Meeting of Shareholders, to be held on December 10, 2019, are incorporated by reference into Part III of this Annual Report on Form 10-K where indicated.

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This Annual Report on Form 10-K, including the “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” contains forward-looking statements regarding future events and our future results that are subject to the safe harbors created under the Securities Act of 1933 (the “Securities Act”) and the Securities Exchange Act of 1934 (the “Exchange Act”). All statements other than statements of historical facts are statements that could be deemed forward-looking statements. These statements are based on current expectations, estimates, forecasts, and projections about the industries in which we operate and the beliefs and assumptions of our management. Words such as “expects,” “anticipates,” “targets,” “goals,” “projects,” “intends,” “plans,” “believes,” “momentum,” “seeks,” “estimates,” “continues,” “endeavors,” “strives,” “may,” variations of such words, and similar expressions are intended to identify such forward-looking statements. In addition, any statements that refer to projections of our future financial performance, our anticipated growth and trends in our businesses, and other characterizations of future events or circumstances are forward-looking statements. Readers are cautioned that these forward-looking statements are only predictions and are subject to risks, uncertainties, and assumptions that are difficult to predict, including those identified below, under “Item 1A. Risk Factors,” and elsewhere herein. Therefore, actual results may differ materially and adversely from those expressed in any forward-looking statements. We undertake no obligation to revise or update any forward-looking statements for any reason.

PART I

Item 1. Business

General

Cisco designs and sells a broad range of technologies that have been powering the Internet since 1984. Across networking, security, collaboration, applications and the cloud, we are integrating intent-based technologies to help our customers manage more users, devices and things connecting to their networks. This will enable us to provide customers with a highly secure, intelligent platform for their digital business.

We conduct our business globally and manage our business by geography. Our business is organized into the following three geographic segments: Americas; Europe, Middle East, and Africa (EMEA); and Asia Pacific, Japan, and China (APJC).

Our products and technologies are grouped into the following categories: Infrastructure Platforms; Applications; Security and Other Products. In addition to our product offerings, we provide a broad range of service offerings, including technical support services and advanced services. Increasingly, we are delivering our technologies through software and services. Our customers include businesses of all sizes, public institutions, governments, and service providers. These customers often look to us as a strategic partner to help them use information technology (IT) to differentiate themselves and drive positive business outcomes.

We were incorporated in California in December 1984, and our headquarters are in San Jose, California. The mailing address of our headquarters is 170 West Tasman Drive, San Jose, California 95134-1706, and our telephone number at that location is (408) 526-4000. Our website is www.cisco.com. Through a link on the Investor Relations section of our website, we make available the following filings as soon as reasonably practicable after they are electronically filed with or furnished to the Securities and Exchange Commission (SEC): our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and any amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act. All such filings are available free of charge. The information posted on our website is not incorporated into this report.

Strategy and Priorities

As our customers add billions of new connections to their enterprises, and as more applications move to a multicloud environment, the network continues to be extremely critical. We believe that our customers are looking for intent-based networks that provide meaningful business value through automation, security, and analytics across private, hybrid, and multicloud environments. Our vision is to deliver highly secure, software-defined, automated and intelligent platforms for our customers. Our strategic priorities include the following: accelerating our pace of innovation, increasing the value of the network, and transforming our business model.

Accelerating Pace of Innovation — Enabling Network Automation

The initial development of new network product offerings that feature our intent-based networking technology was announced in fiscal 2017. The intent-based networking platform is designed to be intelligent, highly secure, powered by “intent” and informed by “context”— features aiming to constantly learn, adapt, automate and protect in order to optimize network operations and defend against an evolving cyber threat landscape. Our intent-based network started with the Software-Defined Access (SD-Access) technology, one of our leading enterprise architectures. These offerings are designed to provide a single, highly secure network fabric that helps ensure policy consistency and network assurance; enables faster launches of new business services; and significantly improves issue resolution times while being open and extendable. SD-Access, built on the principles of Cisco Digital Networking Architecture (DNA), provides what we see as a transformational shift in the building and managing of networks. Our Catalyst

9000 series of switches represented the initial build of our intent-based networking capabilities and provides highly differentiated advancements in security, programmability, and performance, while lowering operating costs by innovating hardware and software.

Since the initial launch, we have integrated intent-based networking across our enterprise access portfolio to help our customers manage more users, devices and things connecting to their networks. To enable our customers to do this, we have introduced several innovations that extend our intent-based networking capabilities to wireless and enterprise routing products, including Software-Defined Wide Area Network (SD-WAN) and Internet of Things (IoT) edge platforms.

To further our innovation in this area, we are applying the latest technologies such as machine learning and advanced analytics to operate and enhance network capabilities. These new network product offerings are designed to enable customers to detect cybersecurity threats, for instance, in encrypted traffic. We have created what is in our view the only network that is designed for security while maintaining privacy.

For the data center, our strategy is to deliver multicloud architectures that bring policy and operational consistency regardless of where applications or data reside by extending our Application Centric Infrastructure (ACI) and our hyperconverged offerings.

Increasing the Value of the Network

Unlocking the Power of Data. Our customers are increasingly using technology, including networks, to grow their businesses, drive efficiencies, and more effectively compete. We believe data is one of an organization's most strategic assets, and this data is increasingly distributed across every organization and ecosystem, on customer premises, at the edge of the network, and in the cloud. As the number of new devices connected to the Internet grows, we believe the network will play an even more critical role in enabling our customers to aggregate, automate, and draw actionable insights from this highly distributed data, where there is a premium on security and speed. We believe this is driving our customers to adopt new IT architectures and organizational structures and, more specifically, to seek network deployment solutions that deliver greater agility, productivity, visibility, security, and other advanced network capabilities.

Security is Foundational. We believe that security is the top IT priority for many of our customers. Our security strategy is focused on delivering an effective cybersecurity architecture combining network, cloud and endpoint-based solutions. Our portfolio is designed to prevent, detect, and remediate a cyber-attack and to integrate security across networking domains. Our intent is to enable our customers to secure their networks for a multicloud world by delivering a platform that continuously detects threats and verifies trust. By combining a number of security technologies, we are delivering an end-to-end, zero-trust architecture. Additionally, through our offerings we help our customers shorten the time between threat detection and response.

Powering a Multicloud World. Our customers are operating in multicloud environments with private, public, and hybrid clouds. Our cloud strategy is to deliver solutions designed to simplify, secure, and transform how customers work in this multicloud world to maximize business outcomes.

As our customers navigate the multicloud world, they need to connect new devices, protect their assets and monitor cloud consumption, and they also require advisory cloud services that are provided in a consistent manner. We are focused on enabling simple, intelligent, automated and highly secure clouds by delivering the infrastructure to navigate complex IT environments through our software and subscription-based offerings including Webex, Meraki cloud networking, and certain other Security and Applications offerings. We believe that customers and partners view our approach to the cloud as differentiated and unique, recognizing that we offer a solution for all cloud environments, including private, hybrid, and public clouds.

In our view, over the next several years, customers will be increasingly writing modern applications that can run on any hybrid cloud, and will be adding billions of connections to their environment. We believe Cisco is uniquely positioned to enable successful business outcomes for customers in hybrid and multicloud environments. In our view, the network has never been more critical to business success and we believe our customers will benefit from the insights and intelligence that we are making accessible through our highly differentiated platforms.

Transforming our Business Model

We are transforming our offerings to meet the evolving needs of our customers. As part of the transformation of our business, we continued to make strides during fiscal 2019 to develop and sell more software and subscription-based offerings. Historically, our various networking technology products have aligned with their respective product categories. However, increasingly, our offerings are crossing multiple product categories. As our core networking evolves, we expect we will add more common software features across our core networking platforms. We are increasing the amount of software offerings that we provide and the proportion of subscription software offerings. We have various types of software arrangements including system software, on premise software, hybrid software and SaaS offerings. In terms of monetization, our software offerings fall into the broad categories of subscription arrangements, including SaaS and term licenses, and perpetual licenses.

For a discussion of the risks associated with our strategy, see “Item 1A. Risk Factors,” including the risk factor entitled “We depend upon the development of new products and services, and enhancements to existing products and services, and if we fail to predict and respond to emerging technological trends and customers’ changing needs, our operating results and market share may suffer.” For information regarding sales of our major products and services, see Note 18 to the Consolidated Financial Statements.

Products and Services

Our products and services are grouped into the following categories:

Infrastructure Platforms

Infrastructure Platforms consist of our core networking technologies of switching, routing, wireless, and data center products that are designed to work together to deliver networking capabilities and transport and/or store data. These technologies consist of both hardware and software offerings that help our customers build networks, automate, orchestrate, integrate, and digitize data. We believe it is critical for us to continue to deliver continuous value to our customers. In fiscal 2019, we continued to make progress in shifting more of our business to software and subscriptions across our core networking portfolio, and in expanding our software offerings. Our objective is to continue moving to cloud-managed solutions across our enterprise networking portfolio. We continue to expand on our intent-based infrastructure, which focuses on simplicity, automation, and security, allowing enterprises to manage and govern the interactions of users, devices and applications across their IT environments. Our Cisco Catalyst 9000 series of switches were developed for security, mobility, IoT, and the cloud. These switches formed the foundation for our leading enterprise architectures, built on the principles of Cisco DNA. Over the last fiscal year, we continued to expand on this technology by extending SD-Access and Cisco DNA Center across our enterprise networking portfolio and by extending ACI to the public and private cloud. In addition, we now have a unified operating system and policy management platform for our enterprise networking portfolio to drive simplicity and consistency across our customers’ networks.

Our switching portfolio encompasses campus switching as well as data center switching offerings. Our campus switching offerings provide the foundation for converged data, voice, video, and IoT services. These switches offer enhanced security and reliability and are designed to scale efficiently as our customers grow. Within campus switching are our Catalyst 9000 series of switches that include hardware with embedded software, along with a software subscription referred to as Cisco DNA. Cisco DNA provides automation, analytics and security features and can be centrally monitored, managed, and configured. Our data center switching offerings provide the foundation for mission critical data centers with high availability, scalability, and security across traditional data centers and private and public cloud data centers.

Our routing portfolio interconnects public and private wireline and mobile networks, delivering highly secure and reliable connectivity to campus, data center and branch networks. Our routing solutions are designed to meet the scale, reliability, and security needs of our customers. During fiscal 2018, we introduced the principles of Cisco DNA into our routing portfolio and since then, we introduced secure SD-WAN, increasing security, flexibility, and delivery through the cloud.

Our Wireless portfolio provides indoor and outdoor wireless coverage designed for seamless roaming use of voice, video, and data applications. These products include wireless access points that are standalone, controller appliance-based, switch-converged, and Meraki cloud-managed offerings. In fiscal 2018, we expanded our capabilities to include network assurance and automation through Cisco DNA and location-based services. In fiscal 2019, we introduced Catalyst and Meraki WiFi6-based access points designed for high-density public or private environments to improve speed, performance, and capacity for wireless networking in both homes and enterprises.

Our Data Center portfolio incorporates various technologies and solutions including the Cisco Unified Computing System, our hyperconverged offering, HyperFlex, and software management capabilities which combine computing, networking, and storage infrastructure management and virtualization to deliver agility, simplicity and scale. These products are designed to extend the power and simplicity of unified computing for data-intensive workloads, applications at the edge of the network, and the next generation of distributed application architectures.

Applications

The Applications product category consists primarily of software-related offerings that utilize the core networking and data center platforms to provide their functions. Our Applications offerings consist of both hardware and software-based solutions, including both software licenses and software-as-a-service. Applications include our collaboration offerings (unified communications, Cisco TelePresence and conferencing) as well as AppDynamics and IoT software offerings.

Our strategy is to make collaboration more effective, comprehensive, and less complex by creating innovative solutions through combining the power of software, hardware, and the network. We offer a portfolio of solutions which can be delivered from the cloud, premise or mixed environments, and which integrate voice, video, and messaging on fixed and mobile networks across a wide range of devices/endpoints such as mobile phones, tablets, desktop and laptop computers, video units, and collaboration appliances. In fiscal 2019, we introduced Cognitive Collaboration, integrating AI and machine learning across the Webex portfolio,

bringing intelligence and context to help our customers work smarter and increase productivity. For on-premise collaboration markets, we launched multi-party Internet Protocol (IP) Phones to extend our reach into third-party call control platforms as well as a new series of telephony headsets which offer innovative integration with our market leading IP phone business.

Our analytics solutions seek to help businesses deliver consistently high-quality digital experiences by connecting end-user experience and application performance to business outcomes. Our applications monitor, correlate, analyze, and act on application performance and business performance data in real time. This automated, cross-stack intelligence enables developers, IT operations, and business owners to make mission critical and strategic improvements.

We continue to invest in IoT as the number of connected IoT devices continues to grow. Our Control Center Platform enables enterprises to automate the lifecycle of connected devices, including tools designed to automatically and remotely onboard, manage, and monetize their IoT devices.

Security

The Security product category primarily includes our network security, cloud and email security, identity and access management, advanced threat protection, and unified threat management products. Our offerings are powered by cloud-delivered threat intelligence based on our Cisco Talos technology. All of these products are part of our cybersecurity architecture that is designed to allow our customers to confront risks by continuously defending against threats and verifying trust, across all of their environments. Regardless of size or industry, security continues to be a leading priority for our customers as they defend against ongoing ransomware and account breaches that represent risk of compromise and economic loss to their businesses.

We continue to integrate security across our portfolio as we believe our security solutions can help build a foundation of trust between users, devices, and applications; across clouds, networks, and mobile workers. When targeted, our solutions help prevent attacks by continuously detecting and remediating the most advanced threats.

In fiscal 2019, we continued to invest in cloud-delivered security. These investments include introducing identity and trust and management solutions, through our recent acquisition of Duo Security, and extending our Umbrella Platform capabilities into a full web-based proxy and firewall. Together, these investments deliver a strong zero-trust architectural solution. We significantly extended our management portfolio with the new Cisco Threat Response, a unified threat investigation and remediation platform that integrates events across our products.

Other Products

Our Other Products category primarily consists of our cloud and system management products. On October 28, 2018, we completed the sale of the Service Provider Video Software Solutions business which was included in this category.

Services

In addition to our product offerings, we provide a broad range of service and support options for our customers, including technical support services, and advanced services. In fiscal 2019, we introduced Customer Experience, combining our overall service and support offerings into one organization that is responsible for the end-to-end customer experience.

Technical support services help our customers ensure their products operate efficiently, remain available, and benefit from the most up-to-date system, and application software. These services help customers protect their network investments, manage risk, and minimize downtime for systems running mission-critical applications. A key example is Cisco Smart Services, which leverages the intelligence from the installed base of our products and customer connections to protect and optimize network investment for our customers and partners. We have expanded our Technical Services offerings from traditional hardware support to software, solutions, and premium support.

Advanced services are part of a comprehensive program that is focused on providing responsive, preventive, and consultative support of our technologies for specific networking needs. We are investing in and expanding our advanced services in the areas of cloud, security, and analytics, which reflects our strategy of selling customer outcomes. We are focused on three priorities including, utilizing Technology Advisory Services to drive higher product and services pull-through; Assessment and Migration services providing the tools, expertise and methodologies to enable our customers to migrate to new technology platforms; and providing optimization services aligned with customers' business expectations.

We believe this strategy, along with our architectural approach and networking expertise, has the potential to further differentiate us from competitors.

Customers and Markets

Many factors influence the IT, collaboration, and networking requirements of our customers. These include the size of the organization, number and types of technology systems, geographic location, and business applications deployed throughout the customer's network. Our customer base is not limited to any specific industry, geography, or market segment. In each of the past three fiscal years, no single customer accounted for 10% or more of revenue. Our customers primarily operate in the following markets: enterprise, commercial, service provider, and public sector.

Enterprise

Enterprise businesses are large regional, national, or global organizations with multiple locations or branch offices and typically employ 1,000 or more employees. Many enterprise businesses have unique IT, collaboration, and networking needs within a multivendor environment. We offer service and support packages, financing, and managed network services, primarily through our service provider partners. We sell these products through a network of third-party application and technology vendors and channel partners, as well as selling directly to these customers.

Commercial

We define commercial businesses as organizations which typically have fewer than 1,000 employees. We sell to the larger, or midmarket, customers within the commercial market through a combination of our direct sales force and channel partners. These customers typically require the latest advanced technologies that our enterprise customers demand, but with less complexity. Small businesses, or organizations with fewer than 100 employees, require information technologies and communication products that are easy to configure, install, and maintain. We sell to these smaller organizations within the commercial market primarily through channel partners.

Service Providers

Service providers offer data, voice, video, and mobile/wireless services to businesses, governments, utilities, and consumers worldwide. This customer market category includes regional, national, and international wireline carriers, as well as Internet, cable, and wireless providers. We also include media, broadcast, and content providers within our service provider market, as the lines in the telecommunications industry continue to blur between traditional network-based, content-based and application-based services. Service providers use a variety of our products and services for their own networks. In addition, many service providers use Cisco data center, virtualization, and collaboration technologies to offer managed or Internet-based services to their business customers. Compared with other customers, service providers are more likely to require network design, deployment, and support services because of the greater scale and higher complexity of their networks, whose requirements are addressed, we believe, by our architectural approach.

Public Sector

Public sector entities include federal governments, state and local governments, as well as educational institution customers. Many public sector entities have unique IT, collaboration, and networking needs within a multi-vendor environment. We sell to public sector entities through a network of third-party application and technology vendors, and channel partners, as well as through direct sales.

Sales Overview

As of the end of fiscal 2019, our worldwide sales and marketing functions consisted of approximately 26,200 employees, including managers, sales representatives, and technical support personnel. We have field sales offices in 97 countries, and we sell our products and services both directly and through a variety of channels with support from our salesforce. A substantial portion of our products and services is sold through channel partners, and the remainder is sold through direct sales. Channel partners include systems integrators, service providers, other resellers, and distributors.

Systems integrators and service providers typically sell directly to end users and often provide system installation, technical support, professional services, and other support services in addition to network equipment sales. Systems integrators also typically integrate our products into an overall solution. Some service providers are also systems integrators.

Distributors typically hold inventory and sell to systems integrators, service providers, and other resellers. We refer to sales through distributors as our two-tier system of sales to the end customer. Starting in fiscal 2019, in connection with the adoption of Accounting Standards Codification (ASC) 606, *Revenue from Contracts with Customers*, a new accounting standard related to revenue recognition, we started recognizing revenue from two-tier distributors on a sell-in method. For further discussion of ASC 606, see Note 2 to the Consolidated Financial Statements. Prior to this, we recognized revenue based on a sell-through method using point of sales information provided by these distributors. These distributors are generally given business terms that allow them to return a portion of inventory, receive credits for changes in selling prices, receive certain rebates, and participate in various cooperative marketing programs.

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For information regarding risks related to our channels, see “Item 1A. Risk Factors,” including the risk factors entitled “Disruption of or changes in our distribution model could harm our sales and margins” and “Inventory management relating to our sales to our two-tier distribution channel is complex, and excess inventory may harm our gross margins.”

For information regarding risks relating to our international operations, see “Item 1A. Risk Factors,” including the risk factors entitled “Our operating results may be adversely affected by unfavorable economic and market conditions and the uncertain geopolitical environment;” “Entrance into new or developing markets exposes us to additional competition and will likely increase demands on our service and support operations;” “Due to the global nature of our operations, political or economic changes or other factors in a specific country or region could harm our operating results and financial condition;” “We are exposed to fluctuations in currency exchange rates that could negatively impact our financial results and cash flows;” and “Cyber-attacks, data breaches or malware may disrupt our operations, harm our operating results and financial condition, and damage our reputation, and cyber-attacks or data breaches on our customers' networks, or in cloud-based services provided by or enabled by us, could result in claims of liability against us, damage our reputation or otherwise harm our business,” among others.

Our service offerings complement our products through a range of consulting, technical, project, quality, and software maintenance services, including 24-hour online and telephone support through technical assistance centers.

Financing Arrangements

We provide financing arrangements for certain qualified customers to build, maintain, and upgrade their networks. We believe customer financing is a competitive advantage in obtaining business, particularly for those customers involved in significant infrastructure projects. Our financing arrangements include the following:

Leases:

- Sales-type
- Direct financing
- Operating

Loans

Financed service contracts

Channels financing arrangements

End-user financing arrangements

Acquisitions, Investments, and Alliances

The markets in which we compete require a wide variety of technologies, products, and capabilities. Our growth strategy is based on the components of innovation, which we sometimes refer to as “build, buy, partner, invest, and co-develop”. This five-prong approach to how we innovate can be summarized as follows:

Build	Working within Cisco, with the developer community, or with customers
Buy	Acquiring or divesting, depending on goals
Partner	Strategically partnering to further build out the business
Invest	Making investments in areas where technology is in its infancy or where there is no dominant technology
Co-develop	Developing new solutions with multi-party teams that may include customers, channel partners, startups, independent software vendors, and academics

Acquisitions

We have acquired many companies, and we expect to make future acquisitions. Mergers and acquisitions of high-technology companies are inherently risky, especially if the acquired company has yet to generate revenue. No assurance can be given that our previous or future acquisitions will be successful or will not materially adversely affect our financial condition or operating results. Prior acquisitions have resulted in a wide range of outcomes, from successful introduction of new products and technologies to an inability to do so. The risks associated with acquisitions are more fully discussed in “Item 1A. Risk Factors,” including the risk factor entitled “We have made and expect to continue to make acquisitions that could disrupt our operations and harm our operating results.”

Investments in Privately Held Companies

We make investments in privately held companies that develop technology or provide services that are complementary to our products or that provide strategic value. The risks associated with these investments are more fully discussed in “Item 1A. Risk Factors,” including the risk factor entitled “We are exposed to fluctuations in the market values of our portfolio investments and in interest rates; impairment of our investments could harm our earnings.”

Strategic Alliances

We pursue strategic alliances with other companies in areas where collaboration can produce industry advancement and acceleration of new markets. The objectives and goals of a strategic alliance can include one or more of the following: technology exchange, product development, joint sales and marketing, or new market creation. Companies with which we have added or expanded strategic alliances during fiscal 2019 and in recent years include Google and Amazon Web Services, among others.

Companies with which we have strategic alliances in some areas may be competitors in other areas, and in our view this trend may increase. The risks associated with our strategic alliances are more fully discussed in “Item 1A. Risk Factors,” including the risk factor entitled “If we do not successfully manage our strategic alliances, we may not realize the expected benefits from such alliances and we may experience increased competition or delays in product development.”

Competition

We compete in the networking and communications equipment markets, providing products and services for transporting data, voice, and video traffic across intranets, extranets, and the Internet. These markets are characterized by rapid change, converging technologies, and a migration to networking and communications solutions that offer relative advantages. These market factors represent both an opportunity and a competitive threat to us. We compete with numerous vendors in each product category. The overall number of our competitors providing niche product solutions may increase. Also, the identity and composition of competitors may change as we increase our activity in our new product markets. As we continue to expand globally, we may see new competition in different geographic regions. In particular, we have experienced price-focused competition from competitors in Asia, especially from China, and we anticipate this will continue.

Our competitors (in each case relative to only some of our products or services) include: Amazon Web Services LLC; Arista Networks, Inc.; Broadcom Inc.; CommScope Holding Company, Inc.; Check Point Software Technologies Ltd.; Dell Technologies Inc.; Extreme Networks, Inc.; F5 Networks, Inc.; FireEye, Inc.; Fortinet, Inc.; Hewlett-Packard Enterprise Company; Huawei Technologies Co., Ltd.; Juniper Networks, Inc.; Lenovo Group Limited; LogMeIn, Inc.; Microsoft Corporation; New Relic, Inc.; Nokia Corporation; Nutanix, Inc.; Palo Alto Networks, Inc.; Slack Technologies, Inc.; Symantec Corporation; Ubiquiti Networks; VMware, Inc.; Zoom Video Communications, Inc.; and Zscaler, Inc.; among others.

Some of these companies compete across many of our product lines, while others are primarily focused in a specific product area. Barriers to entry are relatively low, and new ventures to create products that do or could compete with our products are regularly formed. In addition, some of our competitors may have greater resources, including technical and engineering resources, than we do. As we expand into new markets, we will face competition not only from our existing competitors but also from other competitors, including existing companies with strong technological, marketing, and sales positions in those markets. We also sometimes face competition from resellers and distributors of our products. Companies with which we have strategic alliances in some areas may be competitors in other areas, and in our view this trend may increase. For example, the enterprise data center is undergoing a fundamental transformation arising from the convergence of technologies, including computing, networking, storage, and software, that previously were segregated within the data center. Due to several factors, including the availability of highly scalable and general purpose microprocessors, application-specific integrated circuits (ASICs) offering advanced services, standards-based protocols, cloud computing, and virtualization, the convergence of technologies within the enterprise data center is spanning multiple, previously independent, technology segments. Also, some of our current and potential competitors for enterprise data center business have made acquisitions, or announced new strategic alliances, designed to position them to provide end-to-end technology solutions for the enterprise data center. As a result of all of these developments, we face greater competition in the development and sale of enterprise data center technologies, including competition from entities that are among our long-term strategic alliance partners. Companies that are strategic alliance partners in some areas of our business may acquire or form alliances with our competitors, thereby reducing their business with us.

The principal competitive factors in the markets in which we presently compete and may compete in the future include:

- The ability to sell successful business outcomes
- The ability to provide a broad range of networking and communications products and services
- Product performance
- Price

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- The ability to introduce new products, including providing continuous new customer value and products with price-performance advantages
- The ability to reduce production costs
- The ability to provide value-added features such as security, reliability, and investment protection
- Conformance to standards
- Market presence
- The ability to provide financing
- Disruptive technology shifts and new business models

We also face competition from customers to which we license or supply technology, and suppliers from which we transfer technology. The inherent nature of networking requires interoperability. Therefore, we must cooperate and at the same time compete with many companies. Any inability to effectively manage these complicated relationships with customers, suppliers, and strategic alliance partners could have a material adverse effect on our business, operating results, and financial condition and, accordingly affect our chances of success.

Research and Development

We regularly introduce new products and features to address the requirements of our markets. We allocate our research and development budget among our product categories, which consist of Infrastructure Platforms, Applications, Security, and Other Product technologies. Our research and development expenditures are applied generally to all product areas, with specific areas of focus being identified from time to time. Recent areas of increased focus include our intent-based networking technologies (which encompasses switching, routing, and wireless technologies within Infrastructure Platforms), security, and analytics products. Our expenditures for research and development costs were expensed as incurred.

The industry in which we compete is subject to rapid technological developments, evolving standards, changes in customer requirements, and new product introductions and enhancements. As a result, our success depends in part upon our ability, on a cost-effective and timely basis, to continue to enhance our existing products and to develop and introduce new products that improve performance and reduce total cost of ownership. To achieve these objectives, our management and engineering personnel work with customers to identify and respond to customer needs, as well as with other innovators of Internet working products, including universities, laboratories, and corporations. We also expect to continue to make acquisitions and investments, where appropriate, to provide us with access to new technologies. Nonetheless, there can be no assurance that we will be able to successfully develop products to address new customer requirements and technological changes or that those products will achieve market acceptance.

Manufacturing

We rely on contract manufacturers for our manufacturing needs. We presently use a variety of independent third-party companies to provide services related to printed-circuit board assembly, in-circuit test, product repair, and product assembly. Proprietary software on electronically programmable memory chips is used to configure products that meet customer requirements and to maintain quality control and security. The manufacturing process enables us to configure the hardware and software in unique combinations to meet a wide variety of individual customer requirements. The manufacturing process uses automated testing equipment and burn-in procedures, as well as comprehensive inspection, testing, and statistical process controls, which are designed to help ensure the quality and reliability of our products. The manufacturing processes and procedures are generally certified to International Organization for Standardization (ISO) 9001 standards.

Our arrangements with contract manufacturers generally provide for quality, cost, and delivery requirements, as well as manufacturing process terms, such as continuity of supply; inventory management; flexibility regarding capacity, quality, and cost management; oversight of manufacturing; and conditions for use of our intellectual property. We have not entered into any significant long-term contracts with any manufacturing service provider. We generally have the option to renew arrangements on an as-needed basis. These arrangements generally do not commit us to purchase any particular amount or any quantities beyond amounts covered by orders or forecasts that we submit covering discrete periods of time.

Patents, Intellectual Property, and Licensing

We seek to establish and maintain our proprietary rights in our technology and products through the use of patents, copyrights, trademarks, and trade secret laws. We have a program to file applications for and obtain patents, copyrights, and trademarks in the United States and in selected foreign countries where we believe filing for such protection is appropriate. We also seek to maintain our trade secrets and confidential information by nondisclosure policies and through the use of appropriate confidentiality agreements. We have obtained a substantial number of patents and trademarks in the United States and in other countries. There can be no assurance, however, that the rights obtained can be successfully enforced against infringing products in every jurisdiction. Although we believe the protection afforded by our patents, copyrights, trademarks, and trade secrets has value, the rapidly changing technology in the networking industry and uncertainties in the legal process make our future success dependent primarily on the innovative skills, technological expertise, and management abilities of our employees rather than on the protection afforded by patent, copyright, trademark, and trade secret laws.

Many of our products are designed to include software or other intellectual property licensed from third parties. While it may be necessary in the future to seek or renew licenses relating to various aspects of our products, we believe, based upon past experience and standard industry practice that such licenses generally could be obtained on commercially reasonable terms. Nonetheless, there can be no assurance that the necessary licenses would be available on acceptable terms, if at all. Our inability to obtain certain licenses or other rights or to obtain such licenses or rights on favorable terms, or the need to engage in litigation regarding these matters, could have a material adverse effect on our business, operating results, and financial condition. Moreover, inclusion in our products of software or other intellectual property licensed from third parties on a nonexclusive basis can limit our ability to protect our proprietary rights in our products.

The industry in which we compete is characterized by rapidly changing technology, a large number of patents, and frequent claims and related litigation regarding patent and other intellectual property rights. There can be no assurance that our patents and other proprietary rights will not be challenged, invalidated, or circumvented; that others will not assert intellectual property rights to technologies that are relevant to us; or that our rights will give us a competitive advantage. In addition, the laws of some foreign countries may not protect our proprietary rights to the same extent as the laws of the United States. The risks associated with patents and intellectual property are more fully discussed in “Item 1A. Risk Factors,” including the risk factors entitled “Our proprietary rights may prove difficult to enforce,” “We may be found to infringe on intellectual property rights of others,” and “We rely on the availability of third-party licenses.”

Employees

Employees are summarized as follows (approximate numbers):

	July 27, 2019
Employees by geography:	
United States	39,000
Rest of world	36,900
Total	75,900
Employees by line item on the Consolidated Statements of Operations:	
Cost of sales ⁽¹⁾	20,300
Research and development	21,900
Sales and marketing	26,200
General and administrative	7,500
Total	75,900

⁽¹⁾ Cost of sales includes manufacturing support, services, and training.

Information about our Executive Officers

The following table shows the name, age, and position as of August 31, 2019 of each of our executive officers:

<u>Name</u>	<u>Age</u>	<u>Position with the Company</u>
Charles H. Robbins	53	Chairman and Chief Executive Officer
Mark Chandler	63	Executive Vice President, Chief Legal Officer and Chief Compliance Officer
Gerri Elliott	63	Executive Vice President and Chief Sales and Marketing Officer
David Goeckeler	57	Executive Vice President and General Manager, Networking and Security Business
Kelly A. Kramer	52	Executive Vice President and Chief Financial Officer
Maria Martinez	61	Executive Vice President and Chief Customer Experience Officer
Irving Tan	49	Senior Vice President, Chief of Operations

Mr. Robbins has served as Chief Executive Officer since July 2015, as a member of the Board of Directors since May 2015 and as Chairman of the Board since December 2017. He joined Cisco in December 1997, from which time until March 2002 he held a number of managerial positions within Cisco's sales organization. Mr. Robbins was promoted to Vice President in March 2002, assuming leadership of Cisco's U.S. channel sales organization. Additionally, in July 2005 he assumed leadership of Cisco's Canada channel sales organization. In December 2007, Mr. Robbins was promoted to Senior Vice President, U.S. Commercial, and in August 2009 he was appointed Senior Vice President, U.S. Enterprise, Commercial and Canada. In July 2011, Mr. Robbins was named Senior Vice President, Americas. In October 2012, Mr. Robbins was promoted to Senior Vice President, Worldwide Field Operations, in which position he served until assuming the role of Chief Executive Officer. He is a member of the board of directors of BlackRock, Inc.

Mr. Chandler joined Cisco in July 1996, upon Cisco's acquisition of StrataCom, Inc., where he served as General Counsel. He served as Cisco's Managing Attorney for Europe, the Middle East, and Africa from December 1996 until June 1999; as Director, Worldwide Legal Operations from June 1999 until February 2001; and was promoted to Vice President, Worldwide Legal Services in February 2001. In October 2001, Mr. Chandler was promoted to Vice President, Legal Services and General Counsel, and in May 2003 he additionally was appointed Secretary, a position he held through November 2015. In February 2006, Mr. Chandler was promoted to Senior Vice President, and in May 2012 he was appointed Chief Compliance Officer. In June 2018, Mr. Chandler was promoted to Executive Vice President and Chief Legal Officer. Before joining StrataCom, Mr. Chandler had served as Vice President, Corporate Development and General Counsel of Maxtor Corporation.

Ms. Elliott joined Cisco in April 2018. Ms. Elliott is a former Executive Vice President of Juniper Networks, Inc., where she served as EVP and Chief Customer Officer from March 2013 to February 2014, EVP and Chief Sales Officer from July 2011 to March 2013 and EVP, Strategic Alliances from June 2009 to July 2011. Before joining Juniper, Ms. Elliott held a series of senior executive positions with Microsoft Corporation from 2001-2008 including Corporate Vice President of Microsoft's Industry Solutions Group, Worldwide Public Sector and North American Enterprise Sales organizations. Prior to joining Microsoft Corporation, Ms. Elliott spent 22 years at IBM Corporation, where she held several senior executive positions both in the U.S. and internationally. Since 2014 Ms. Elliott has served as a director on several public company boards including Whirlpool Corporation (since 2014), Bed Bath & Beyond, Inc. (2014-17), Imperva, Inc. (2015-18), Marvell Technology Group Ltd. (2017-18) and Mimecast Ltd. (2017-18), and during this period she also founded and led the development of Broadrooms.com, an informational resource for executive women who serve or want to serve on corporate boards in the U.S.

Mr. Goeckeler joined Cisco in May 2000, from which time until December 2010 he held a variety of leadership positions within Cisco's engineering organization, covering such technology focus areas as voice over IP, mobility, video infrastructure and networking. In December 2010, Mr. Goeckeler was promoted to Vice President, Engineering, in which his responsibilities included leading various product and platform-related initiatives within Cisco's Service Provider Business group. In October 2012, Mr. Goeckeler assumed leadership of engineering in Cisco's Security Business, in September 2014 was elevated to General Manager of the Security Business, and in November 2014 was promoted to Senior Vice President. In May 2016, Mr. Goeckeler added networking to his oversight responsibilities, assuming the role of Senior Vice President, Networking and Security Business, and was promoted to Executive Vice President in July 2017. In March 2018, Mr. Goeckeler assumed the added responsibility for Cisco's IoT and analytics businesses.

Ms. Kramer joined Cisco in January 2012 as Senior Vice President, Corporate Finance. She served in that position until October 2014 and served as Cisco's Senior Vice President, Business Technology and Operations Finance from October 2013 until December 2014. She was appointed to her current position effective January 2015. From January 2009 until she joined Cisco, Ms. Kramer served as Vice President and Chief Financial Officer of GE Healthcare Systems. Ms. Kramer served as Vice President and Chief Financial Officer of GE Healthcare Diagnostic Imaging from August 2007 to January 2009 and as Chief Financial Officer of GE Healthcare Biosciences from January 2006 to July 2007. Prior to that, Ms. Kramer held various leadership positions with GE corporate and other GE businesses. She is a member of the board of directors of Gilead Sciences, Inc.

Ms. Martinez joined Cisco in April 2018. Prior to joining Cisco, she served in a variety of senior executive roles at Salesforce.com, inc. including President, Global Customer Success and Latin America from March 2016 to April 2018; President, Sales and Customer Success from February 2013 to March 2016; Executive Vice President and Chief Growth Officer from February 2012 to February 2013; and Executive Vice President, Customers for Life from February 2010 to February 2012. Ms. Martinez's experience prior to Salesforce includes Corporate Vice President of Worldwide Services at Microsoft Corporation, President and Chief Executive Officer of Embrace Networks, Inc. and various senior leadership roles at Motorola, Inc. and AT&T Inc./Bell Laboratories. Ms. Martinez was a member of the board of directors of Plantronics, Inc. from September 2015 to April 2018.

Mr. Tan joined Cisco in December 2005, serving in manager-level and director-level positions within Cisco's Sales and Managed Services functions until March 2008, at which time he joined Hewlett Packard Corporation as General Manager of its Communications and Media Solutions Group in Asia Pacific and Japan. In April 2009, Mr. Tan rejoined Cisco, serving as Sales Director in charge of Malaysia and Singapore, and in February 2013 he was promoted to Vice President, Sales with responsibility for the Southeast Asia region. In April 2014, Mr. Tan was promoted to Senior Vice President, Sales with responsibility for Cisco's APJ geography. In January 2018, he was promoted to his current position.

Item 1A. Risk Factors

Set forth below and elsewhere in this report and in other documents we file with the SEC are descriptions of the risks and uncertainties that could cause our actual results to differ materially from the results contemplated by the forward-looking statements contained in this report.

OUR OPERATING RESULTS MAY FLUCTUATE IN FUTURE PERIODS, WHICH MAY ADVERSELY AFFECT OUR STOCK PRICE

Our operating results have been in the past, and will continue to be, subject to quarterly and annual fluctuations as a result of numerous factors, some of which may contribute to more pronounced fluctuations in an uncertain global economic environment. These factors include:

- Fluctuations in demand for our products and services, especially with respect to service providers and Internet businesses, in part due to changes in the global economic environment
- Changes in sales and implementation cycles for our products and reduced visibility into our customers' spending plans and associated revenue
- Our ability to maintain appropriate inventory levels and purchase commitments
- Price and product competition in the communications and networking industries, which can change rapidly due to technological innovation and different business models from various geographic regions
- The overall movement toward industry consolidation among both our competitors and our customers
- The introduction and market acceptance of new technologies and products, and our success in new and evolving markets, and in emerging technologies, as well as the adoption of new standards
- The transformation of our business to deliver more software and subscription offerings where revenue is recognized over time
- Variations in sales channels, product costs, mix of products sold, or mix of direct sales and indirect sales
- The timing, size, and mix of orders from customers
- Manufacturing and customer lead times

- Fluctuations in our gross margins, and the factors that contribute to such fluctuations, as described below
- The ability of our customers, channel partners, contract manufacturers and suppliers to obtain financing or to fund capital expenditures, especially during a period of global credit market disruption or in the event of customer, channel partner, contract manufacturer or supplier financial problems
- Actual events, circumstances, outcomes, and amounts differing from judgments, assumptions, and estimates used in determining the values of certain assets (including the amounts of related valuation allowances), liabilities, and other items reflected in our Consolidated Financial Statements
- How well we execute on our strategy and operating plans and the impact of changes in our business model that could result in significant restructuring charges
- Our ability to achieve targeted cost reductions
- Benefits anticipated from our investments in engineering, sales, service, and marketing
- Changes in tax laws or accounting rules, or interpretations thereof

As a consequence, operating results for a particular future period are difficult to predict, and, therefore, prior results are not necessarily indicative of results to be expected in future periods. Any of the foregoing factors, or any other factors discussed elsewhere herein, could have a material adverse effect on our business, results of operations, and financial condition that could adversely affect our stock price.

OUR OPERATING RESULTS MAY BE ADVERSELY AFFECTED BY UNFAVORABLE ECONOMIC AND MARKET CONDITIONS AND THE UNCERTAIN GEOPOLITICAL ENVIRONMENT

Challenging economic conditions worldwide have from time to time contributed, and may continue to contribute, to slowdowns in the communications and networking industries at large, as well as in specific segments and markets in which we operate, resulting in:

- Reduced demand for our products as a result of continued constraints on IT-related capital spending by our customers, particularly service providers, and other customer markets as well
- Increased price competition for our products, not only from our competitors but also as a consequence of customers disposing of unutilized products
- Risk of excess and obsolete inventories
- Risk of supply constraints
- Risk of excess facilities and manufacturing capacity
- Higher overhead costs as a percentage of revenue and higher interest expense

The global macroeconomic environment has been challenging and inconsistent. Instability in the global credit markets, the impact of uncertainty regarding global central bank monetary policy, the instability in the geopolitical environment in many parts of the world including as a result of the pending United Kingdom “Brexit” withdrawal from the European Union, the current economic challenges in China, including global economic ramifications of Chinese economic difficulties, and other disruptions may continue to put pressure on global economic conditions. If global economic and market conditions, or economic conditions in key markets, remain uncertain or deteriorate further, we may experience material impacts on our business, operating results, and financial condition.

Our operating results in one or more segments may also be affected by uncertain or changing economic conditions particularly germane to that segment or to particular customer markets within that segment. For example, emerging countries in the aggregate experienced a decline in product orders in the fourth quarter of fiscal 2019, and in certain prior periods.

In addition, reports of certain intelligence gathering methods of the U.S. government could affect customers’ perception of the products of IT companies which design and manufacture products in the United States. Trust and confidence in us as an IT supplier is critical to the development and growth of our markets. Impairment of that trust, or foreign regulatory actions taken in response

to reports of certain intelligence gathering methods of the U.S. government, could affect the demand for our products from customers outside of the United States and could have an adverse effect on our operating results.

WE HAVE BEEN INVESTING AND EXPECT TO CONTINUE TO INVEST IN KEY PRIORITY AND GROWTH AREAS AS WELL AS MAINTAINING LEADERSHIP IN INFRASTRUCTURE PLATFORMS AND IN SERVICES, AND IF THE RETURN ON THESE INVESTMENTS IS LOWER OR DEVELOPS MORE SLOWLY THAN WE EXPECT, OUR OPERATING RESULTS MAY BE HARMED

We expect to realign and dedicate resources into key priority and growth areas, such as Security and Applications, while also focusing on maintaining leadership in Infrastructure Platforms and in Services. However, the return on our investments may be lower, or may develop more slowly, than we expect. If we do not achieve the benefits anticipated from these investments (including if our selection of areas for investment does not play out as we expect), or if the achievement of these benefits is delayed, our operating results may be adversely affected.

OUR REVENUE FOR A PARTICULAR PERIOD IS DIFFICULT TO PREDICT, AND A SHORTFALL IN REVENUE MAY HARM OUR OPERATING RESULTS

As a result of a variety of factors discussed in this report, our revenue for a particular quarter is difficult to predict, especially in light of a challenging and inconsistent global macroeconomic environment and related market uncertainty.

Our revenue may grow at a slower rate than in past periods or decline as it did in the first quarter of fiscal 2018, and in certain prior periods on a year-over-year basis. Our ability to meet financial expectations could also be adversely affected if the nonlinear sales pattern seen in some of our past quarters recurs in future periods. We have experienced periods of time during which shipments have exceeded net bookings or manufacturing issues have delayed shipments, leading to nonlinearity in shipping patterns. In addition to making it difficult to predict revenue for a particular period, nonlinearity in shipping can increase costs, because irregular shipment patterns result in periods of underutilized capacity and periods in which overtime expenses may be incurred, as well as in potential additional inventory management-related costs. In addition, to the extent that manufacturing issues and any related component shortages result in delayed shipments in the future, and particularly in periods in which our contract manufacturers are operating at higher levels of capacity, it is possible that revenue for a quarter could be adversely affected if such matters occur and are not remediated within the same quarter.

The timing of large orders can also have a significant effect on our business and operating results from quarter to quarter, primarily in the United States and in emerging countries. From time to time, we receive large orders that have a significant effect on our operating results in the period in which the order is recognized as revenue. The timing of such orders is difficult to predict, and the timing of revenue recognition from such orders may affect period to period changes in revenue. As a result, our operating results could vary materially from quarter to quarter based on the receipt of such orders and their ultimate recognition as revenue.

Inventory management remains an area of focus. We have experienced longer than normal manufacturing lead times in the past which have caused some customers to place the same order multiple times within our various sales channels and to cancel the duplicative orders upon receipt of the product, or to place orders with other vendors with shorter manufacturing lead times. Such multiple ordering (along with other factors) or risk of order cancellation may cause difficulty in predicting our revenue and, as a result, could impair our ability to manage parts inventory effectively. In addition, our efforts to improve manufacturing lead-time performance may result in more variability and less predictability in our revenue and operating results. In addition, when facing component supply-related challenges we have increased our efforts in procuring components in order to meet customer expectations, which in turn contribute to an increase in purchase commitments. Increases in our purchase commitments to shorten lead times could also lead to excess and obsolete inventory charges if the demand for our products is less than our expectations.

We plan our operating expense levels based primarily on forecasted revenue levels. These expenses and the impact of long-term commitments are relatively fixed in the short term. A shortfall in revenue could lead to operating results being below expectations because we may not be able to quickly reduce these fixed expenses in response to short-term business changes.

Any of the above factors could have a material adverse impact on our operations and financial results.

WE EXPECT GROSS MARGIN TO VARY OVER TIME, AND OUR LEVEL OF PRODUCT GROSS MARGIN MAY NOT BE SUSTAINABLE

Although our product gross margin increased in fiscal 2019, our level of product gross margins have declined in certain prior periods on a year-over-year basis and could decline in future periods due to adverse impacts from various factors, including:

- Changes in customer, geographic, or product mix, including mix of configurations within each product group
- Introduction of new products, including products with price-performance advantages, and new business models including the transformation of our business to deliver more software and subscription offerings

- Our ability to reduce production costs
- Entry into new markets or growth in lower margin markets, including markets with different pricing and cost structures, through acquisitions or internal development
- Sales discounts
- Increases in material, labor or other manufacturing-related costs, which could be significant especially during periods of supply constraints such as those impacting the market for memory components
- Excess inventory and inventory holding charges
- Obsolescence charges
- Changes in shipment volume
- The timing of revenue recognition and revenue deferrals
- Increased cost (including those caused by tariffs), loss of cost savings or dilution of savings due to changes in component pricing or charges incurred due to inventory holding periods if parts ordering does not correctly anticipate product demand or if the financial health of either contract manufacturers or suppliers deteriorates
- Lower than expected benefits from value engineering
- Increased price competition, including competitors from Asia, especially from China
- Changes in distribution channels
- Increased warranty costs
- Increased amortization of purchased intangible assets, especially from acquisitions
- How well we execute on our strategy and operating plans

Changes in service gross margin may result from various factors such as changes in the mix between technical support services and advanced services, as well as the timing of technical support service contract initiations and renewals and the addition of personnel and other resources to support higher levels of service business in future periods.

SALES TO THE SERVICE PROVIDER MARKET ARE ESPECIALLY VOLATILE, AND WEAKNESS IN ORDERS FROM THIS INDUSTRY MAY HARM OUR OPERATING RESULTS AND FINANCIAL CONDITION

Sales to the service provider market have been characterized by large and sporadic purchases, especially relating to our router sales and sales of certain other Infrastructure Platforms and Applications products, in addition to longer sales cycles. Service provider product orders decreased during fiscal 2019 and in certain prior periods, and at various times in the past, including in the fourth quarter of fiscal 2019, we have experienced significant weakness in product orders from service providers. Product orders from the service provider market could continue to decline and, as has been the case in the past, such weakness could persist over extended periods of time given fluctuating market conditions. Sales activity in this industry depends upon the stage of completion of expanding network infrastructures; the availability of funding; and the extent to which service providers are affected by regulatory, economic, and business conditions in the country of operations. Weakness in orders from this industry, including as a result of any slowdown in capital expenditures by service providers (which may be more prevalent during a global economic downturn, or periods of economic, political or regulatory uncertainty), could have a material adverse effect on our business, operating results, and financial condition. Such slowdowns may continue or recur in future periods. Orders from this industry could decline for many reasons other than the competitiveness of our products and services within their respective markets. For example, in the past, many of our service provider customers have been materially and adversely affected by slowdowns in the general economy, by overcapacity, by changes in the service provider market, by regulatory developments, and by constraints on capital availability, resulting in business failures and substantial reductions in spending and expansion plans. These conditions have materially harmed our business and operating results in the past, and some of these or other conditions in the service provider market could affect our business and operating results in any future period. Finally, service provider customers typically have longer implementation cycles; require a broader range of services, including design services; demand that vendors take on a larger share of risks; often

require acceptance provisions, which can lead to a delay in revenue recognition; and expect financing from vendors. All these factors can add further risk to business conducted with service providers.

DISRUPTION OF OR CHANGES IN OUR DISTRIBUTION MODEL COULD HARM OUR SALES AND MARGINS

If we fail to manage distribution of our products and services properly, or if our distributors' financial condition or operations weaken, our revenue and gross margins could be adversely affected.

A substantial portion of our products and services is sold through our channel partners, and the remainder is sold through direct sales. Our channel partners include systems integrators, service providers, other resellers, and distributors. Systems integrators and service providers typically sell directly to end users and often provide system installation, technical support, professional services, and other support services in addition to network equipment sales. Systems integrators also typically integrate our products into an overall solution, and a number of service providers are also systems integrators. Distributors stock inventory and typically sell to systems integrators, service providers, and other resellers. We refer to sales through distributors as our two-tier system of sales to the end customer. These distributors are generally given business terms that allow them to return a portion of inventory, receive credits for changes in selling prices, and participate in various cooperative marketing programs. If sales through indirect channels increase, this may lead to greater difficulty in forecasting the mix of our products and, to a degree, the timing of orders from our customers.

Historically, we have seen fluctuations in our gross margins based on changes in the balance of our distribution channels. Although variability to date has not been significant, there can be no assurance that changes in the balance of our distribution model in future periods would not have an adverse effect on our gross margins and profitability.

Some factors could result in disruption of or changes in our distribution model, which could harm our sales and margins, including the following:

- We compete with some of our channel partners, including through our direct sales, which may lead these channel partners to use other suppliers that do not directly sell their own products or otherwise compete with them
- Some of our channel partners may demand that we absorb a greater share of the risks that their customers may ask them to bear
- Some of our channel partners may have insufficient financial resources and may not be able to withstand changes and challenges in business conditions
- Revenue from indirect sales could suffer if our distributors' financial condition or operations weaken

In addition, we depend on our channel partners globally to comply with applicable regulatory requirements. To the extent that they fail to do so, that could have a material adverse effect on our business, operating results, and financial condition. Further, sales of our products outside of agreed territories can result in disruption to our distribution channels.

THE MARKETS IN WHICH WE COMPETE ARE INTENSELY COMPETITIVE, WHICH COULD ADVERSELY AFFECT OUR ACHIEVEMENT OF REVENUE GROWTH

The markets in which we compete are characterized by rapid change, converging technologies, and a migration to networking and communications solutions that offer relative advantages. These market factors represent a competitive threat to us. We compete with numerous vendors in each product category. The overall number of our competitors providing niche product solutions may increase. Also, the identity and composition of competitors may change as we increase our activity in newer product areas, and in key priority and growth areas. For example, as products related to network programmability, such as SDN products, become more prevalent, we expect to face increased competition from companies that develop networking products based on commoditized hardware, referred to as "white box" hardware, to the extent customers decide to purchase those product offerings instead of ours. In addition, the growth in demand for technology delivered as a service enables new competitors to enter the market.

As we continue to expand globally, we may see new competition in different geographic regions. In particular, we have experienced price-focused competition from competitors in Asia, especially from China, and we anticipate this will continue. For information regarding our competitors, see the section entitled "Competition" contained in *Item 1. Business* of this report.

Some of our competitors compete across many of our product lines, while others are primarily focused in a specific product area. Barriers to entry are relatively low, and new ventures to create products that do or could compete with our products are regularly formed. In addition, some of our competitors may have greater resources, including technical and engineering resources, than we do. As we expand into new markets, we will face competition not only from our existing competitors but also from other competitors, including existing companies with strong technological, marketing, and sales positions in those markets. We also sometimes face

competition from resellers and distributors of our products. Companies with which we have strategic alliances in some areas may be competitors in other areas, and in our view this trend may increase.

For example, the enterprise data center is undergoing a fundamental transformation arising from the convergence of technologies, including computing, networking, storage, and software, that previously were segregated. Due to several factors, including the availability of highly scalable and general purpose microprocessors, ASICs offering advanced services, standards based protocols, cloud computing and virtualization, the convergence of technologies within the enterprise data center is spanning multiple, previously independent, technology segments. Also, some of our current and potential competitors for enterprise data center business have made acquisitions, or announced new strategic alliances, designed to position them to provide end-to-end technology solutions for the enterprise data center. As a result of all of these developments, we face greater competition in the development and sale of enterprise data center technologies, including competition from entities that are among our long-term strategic alliance partners. Companies that are strategic alliance partners in some areas of our business may acquire or form alliances with our competitors, thereby reducing their business with us.

The principal competitive factors in the markets in which we presently compete and may compete in the future include:

- The ability to sell successful business outcomes
- The ability to provide a broad range of networking and communications products and services
- Product performance
- Price
- The ability to introduce new products, including providing continuous new customer value and products with price-performance advantages
- The ability to reduce production costs
- The ability to provide value-added features such as security, reliability, and investment protection
- Conformance to standards
- Market presence
- The ability to provide financing
- Disruptive technology shifts and new business models

We also face competition from customers to which we license or supply technology and suppliers from which we transfer technology. The inherent nature of networking requires interoperability. As such, we must cooperate and at the same time compete with many companies. Any inability to effectively manage these complicated relationships with customers, suppliers, and strategic alliance partners could have a material adverse effect on our business, operating results, and financial condition and accordingly affect our chances of success.

INVENTORY MANAGEMENT RELATING TO OUR SALES TO OUR TWO-TIER DISTRIBUTION CHANNEL IS COMPLEX, AND EXCESS INVENTORY MAY HARM OUR GROSS MARGINS

We must manage inventory relating to sales to our distributors effectively, because inventory held by them could affect our results of operations. Our distributors may increase orders during periods of product shortages, cancel orders if their inventory is too high, or delay orders in anticipation of new products. They also may adjust their orders in response to the supply of our products and the products of our competitors that are available to them, and in response to seasonal fluctuations in end-user demand. Our distributors are generally given business terms that allow them to return a portion of inventory, receive credits for changes in selling price, and participate in various cooperative marketing programs. Inventory management remains an area of focus as we balance the need to maintain strategic inventory levels to ensure competitive lead times against the risk of inventory obsolescence because of rapidly changing technology and customer requirements. When facing component supply-related challenges, we have increased our efforts in procuring components in order to meet customer expectations. If we ultimately determine that we have excess inventory, we may have to reduce our prices and write down inventory, which in turn could result in lower gross margins.

SUPPLY CHAIN ISSUES, INCLUDING FINANCIAL PROBLEMS OF CONTRACT MANUFACTURERS OR COMPONENT SUPPLIERS, OR A SHORTAGE OF ADEQUATE COMPONENT SUPPLY OR MANUFACTURING CAPACITY THAT INCREASED OUR COSTS OR CAUSED A DELAY IN OUR ABILITY TO FULFILL ORDERS, COULD HAVE AN ADVERSE IMPACT ON OUR BUSINESS AND OPERATING RESULTS, AND OUR FAILURE TO ESTIMATE CUSTOMER DEMAND PROPERLY MAY RESULT IN EXCESS OR OBSOLETE COMPONENT SUPPLY, WHICH COULD ADVERSELY AFFECT OUR GROSS MARGINS

The fact that we do not own or operate the bulk of our manufacturing facilities and that we are reliant on our extended supply chain could have an adverse impact on the supply of our products and on our business and operating results:

- Any financial problems of either contract manufacturers or component suppliers could either limit supply or increase costs
- Reservation of manufacturing capacity at our contract manufacturers by other companies, inside or outside of our industry, could either limit supply or increase costs
- Industry consolidation occurring within one or more component supplier markets, such as the semiconductor market, could either limit supply or increase costs

A reduction or interruption in supply; a significant increase in the price of one or more components; a failure to adequately authorize procurement of inventory by our contract manufacturers; a failure to appropriately cancel, reschedule, or adjust our requirements based on our business needs; or a decrease in demand for our products could materially adversely affect our business, operating results, and financial condition and could materially damage customer relationships. Furthermore, as a result of binding price or purchase commitments with suppliers, we may be obligated to purchase components at prices that are higher than those available in the current market. In the event that we become committed to purchase components at prices in excess of the current market price when the components are actually used, our gross margins could decrease. We have experienced longer than normal lead times in the past. Although we have generally secured additional supply or taken other mitigation actions when significant disruptions have occurred, if similar situations occur in the future, they could have a material adverse effect on our business, results of operations, and financial condition. See the risk factor above entitled “Our revenue for a particular period is difficult to predict, and a shortfall in revenue may harm our operating results.”

Our growth and ability to meet customer demands depend in part on our ability to obtain timely deliveries of parts from our suppliers and contract manufacturers. We have experienced component shortages in the past, including shortages caused by manufacturing process issues, that have affected our operations. We may in the future experience a shortage of certain component parts as a result of our own manufacturing issues, manufacturing issues at our suppliers or contract manufacturers, capacity problems experienced by our suppliers or contract manufacturers including capacity or cost problems resulting from industry consolidation, or strong demand in the industry for those parts. Growth in the economy is likely to create greater pressures on us and our suppliers to accurately project overall component demand and component demands within specific product categories and to establish optimal component levels and manufacturing capacity, especially for labor-intensive components, components for which we purchase a substantial portion of the supply, or the re-ramping of manufacturing capacity for highly complex products. During periods of shortages or delays the price of components may increase, or the components may not be available at all, and we may also encounter shortages if we do not accurately anticipate our needs. We may not be able to secure enough components at reasonable prices or of acceptable quality to build new products in a timely manner in the quantities or configurations needed. Accordingly, our revenue and gross margins could suffer until other sources can be developed. Our operating results would also be adversely affected if, anticipating greater demand than actually develops, we commit to the purchase of more components than we need, which is more likely to occur in a period of demand uncertainties such as we are currently experiencing. There can be no assurance that we will not encounter these problems in the future. Although in many cases we use standard parts and components for our products, certain components are presently available only from a single source or limited sources, and a global economic downturn and related market uncertainty could negatively impact the availability of components from one or more of these sources, especially during times such as we have recently seen when there are supplier constraints based on labor and other actions taken during economic downturns. We may not be able to diversify sources in a timely manner, which could harm our ability to deliver products to customers and seriously impact present and future sales.

We believe that we may be faced with the following challenges in the future:

- New markets in which we participate may grow quickly, which may make it difficult to quickly obtain significant component capacity
- As we acquire companies and new technologies, we may be dependent, at least initially, on unfamiliar supply chains or relatively small supply partners

- We face competition for certain components that are supply-constrained, from existing competitors, and companies in other markets

Manufacturing capacity and component supply constraints could continue to be significant issues for us. We purchase components from a variety of suppliers and use several contract manufacturers to provide manufacturing services for our products. During the normal course of business, in order to improve manufacturing lead-time performance and to help ensure adequate component supply, we enter into agreements with contract manufacturers and suppliers that either allow them to procure inventory based upon criteria as defined by us or that establish the parameters defining our requirements. In certain instances, these agreements allow us the option to cancel, reschedule, and adjust our requirements based on our business needs prior to firm orders being placed. When facing component supply-related challenges we have increased our efforts in procuring components in order to meet customer expectations, which in turn contributes to an increase in purchase commitments. Increases in our purchase commitments to shorten lead times could also lead to excess and obsolete inventory charges if the demand for our products is less than our expectations. If we fail to anticipate customer demand properly, an oversupply of parts could result in excess or obsolete components that could adversely affect our gross margins. For additional information regarding our purchase commitments with contract manufacturers and suppliers, see Note 13 to the Consolidated Financial Statements.

WE DEPEND UPON THE DEVELOPMENT OF NEW PRODUCTS AND SERVICES, AND ENHANCEMENTS TO EXISTING PRODUCTS AND SERVICES, AND IF WE FAIL TO PREDICT AND RESPOND TO EMERGING TECHNOLOGICAL TRENDS AND CUSTOMERS' CHANGING NEEDS, OUR OPERATING RESULTS AND MARKET SHARE MAY SUFFER

The markets for our products and services are characterized by rapidly changing technology, evolving industry standards, new product and service introductions, and evolving methods of building and operating networks. Our operating results depend on our ability to develop and introduce new products and services into existing and emerging markets and to reduce the production costs of existing products. If customers do not purchase and/or renew our offerings our business could be harmed.

The process of developing new technology, including intent-based networking, more programmable, flexible and virtual networks, and technology related to other market transitions— such as security, digital transformation and IoT, and cloud— is complex and uncertain, and if we fail to accurately predict customers' changing needs and emerging technological trends our business could be harmed. We must commit significant resources, including the investments we have been making in our strategic priorities to developing new products and services before knowing whether our investments will result in products and services the market will accept. In particular, if our model of the evolution of networking does not emerge as we believe it will, or if the industry does not evolve as we believe it will, or if our strategy for addressing this evolution is not successful, many of our strategic initiatives and investments may be of no or limited value. For example, if we do not introduce products related to network programmability, such as software-defined-networking products, in a timely fashion, or if product offerings in this market that ultimately succeed are based on technology, or an approach to technology, that differs from ours, such as, for example, networking products based on “white box” hardware, our business could be harmed. Similarly, our business could be harmed if we fail to develop, or fail to develop in a timely fashion, offerings to address other transitions, or if the offerings addressing these other transitions that ultimately succeed are based on technology, or an approach to technology, different from ours. In addition, our business could be adversely affected in periods surrounding our new product introductions if customers delay purchasing decisions to qualify or otherwise evaluate the new product offerings.

We have also been transforming our business to move from selling individual products and services to selling products and services integrated into architectures and solutions, and we are seeking to meet the evolving needs of customers which include offering our products and solutions in the manner in which customers wish to consume them. As a part of this transformation, we continue to make changes to how we are organized and how we build and deliver our technology, including changes in our business models with customers. If our strategy for addressing our customer needs, or the architectures and solutions we develop do not meet those needs, or the changes we are making in how we are organized and how we build and deliver or technology is incorrect or ineffective, our business could be harmed.

Furthermore, we may not execute successfully on our vision or strategy because of challenges with regard to product planning and timing, technical hurdles that we fail to overcome in a timely fashion, or a lack of appropriate resources. This could result in competitors, some of which may also be our strategic alliance partners, providing those solutions before we do and loss of market share, revenue, and earnings. In addition, the growth in demand for technology delivered as a service enables new competitors to enter the market. The success of new products and services depends on several factors, including proper new product and service definition, component costs, timely completion and introduction of these products and services, differentiation of new products and services from those of our competitors, and market acceptance of these products and services. There can be no assurance that we will successfully identify new product and services opportunities, develop and bring new products and services to market in a timely manner, or achieve market acceptance of our products and services or that products, services and technologies developed by others will not render our products, services or technologies obsolete or noncompetitive. The products and technologies in our

other product categories and key priority and growth areas may not prove to have the market success we anticipate, and we may not successfully identify and invest in other emerging or new products and services.

CHANGES IN INDUSTRY STRUCTURE AND MARKET CONDITIONS COULD LEAD TO CHARGES RELATED TO DISCONTINUANCES OF CERTAIN OF OUR PRODUCTS OR BUSINESSES, ASSET IMPAIRMENTS AND WORKFORCE REDUCTIONS OR RESTRUCTURINGS

In response to changes in industry and market conditions, we may be required to strategically realign our resources and to consider restructuring, disposing of, or otherwise exiting businesses. Any resource realignment, or decision to limit investment in or dispose of or otherwise exit businesses, may result in the recording of special charges, such as inventory and technology-related write-offs, workforce reduction or restructuring costs, charges relating to consolidation of excess facilities, or claims from third parties who were resellers or users of discontinued products. Our estimates with respect to the useful life or ultimate recoverability of our carrying basis of assets, including purchased intangible assets, could change as a result of such assessments and decisions. Although in certain instances our supply agreements allow us the option to cancel, reschedule, and adjust our requirements based on our business needs prior to firm orders being placed, our loss contingencies may include liabilities for contracts that we cannot cancel with contract manufacturers and suppliers. Further, our estimates relating to the liabilities for excess facilities are affected by changes in real estate market conditions. Additionally, we are required to perform goodwill impairment tests on an annual basis and between annual tests in certain circumstances, and future goodwill impairment tests may result in a charge to earnings.

We initiated a restructuring plan during fiscal 2018, which we expect to substantially complete in the first half of fiscal 2020. The implementation of this restructuring plan may be disruptive to our business, and following completion of the restructuring plan our business may not be more efficient or effective than prior to implementation of the plan. Our restructuring activities, including any related charges and the impact of the related headcount restructurings, could have a material adverse effect on our business, operating results, and financial condition.

OVER THE LONG TERM WE INTEND TO INVEST IN ENGINEERING, SALES, SERVICE AND MARKETING ACTIVITIES, AND THESE INVESTMENTS MAY ACHIEVE DELAYED, OR LOWER THAN EXPECTED, BENEFITS WHICH COULD HARM OUR OPERATING RESULTS

While we intend to focus on managing our costs and expenses, over the long term, we also intend to invest in personnel and other resources related to our engineering, sales, service and marketing functions as we realign and dedicate resources on key priority and growth areas, such as Security and Applications, and we also intend to focus on maintaining leadership in Infrastructure Platforms and in Services. We are likely to recognize the costs associated with these investments earlier than some of the anticipated benefits, and the return on these investments may be lower, or may develop more slowly, than we expect. If we do not achieve the benefits anticipated from these investments, or if the achievement of these benefits is delayed, our operating results may be adversely affected.

OUR BUSINESS SUBSTANTIALLY DEPENDS UPON THE CONTINUED GROWTH OF THE INTERNET AND INTERNET-BASED SYSTEMS

A substantial portion of our business and revenue depends on growth and evolution of the Internet, including the continued development of the Internet and the anticipated market transitions, and on the deployment of our products by customers who depend on such continued growth and evolution. To the extent that an economic slowdown or uncertainty and related reduction in capital spending adversely affect spending on Internet infrastructure, including spending or investment related to anticipated market transitions, we could experience material harm to our business, operating results, and financial condition.

Because of the rapid introduction of new products and changing customer requirements related to matters such as cost-effectiveness and security, we believe that there could be performance problems with Internet communications in the future, which could receive a high degree of publicity and visibility. Because we are a large supplier of networking products, our business, operating results, and financial condition may be materially adversely affected, regardless of whether or not these problems are due to the performance of our own products. Such an event could also result in a material adverse effect on the market price of our common stock independent of direct effects on our business.

WE HAVE MADE AND EXPECT TO CONTINUE TO MAKE ACQUISITIONS THAT COULD DISRUPT OUR OPERATIONS AND HARM OUR OPERATING RESULTS

Our growth depends upon market growth, our ability to enhance our existing products, and our ability to introduce new products on a timely basis. We intend to continue to address the need to develop new products and enhance existing products through acquisitions of other companies, product lines, technologies, and personnel. Acquisitions involve numerous risks, including the following:

- Difficulties in integrating the operations, systems, technologies, products, and personnel of the acquired companies, particularly companies with large and widespread operations and/or complex products

- Diversion of management’s attention from normal daily operations of the business and the challenges of managing larger and more widespread operations resulting from acquisitions
- Potential difficulties in completing projects associated with in-process research and development intangibles
- Difficulties in entering markets in which we have no or limited direct prior experience and where competitors in such markets have stronger market positions
- Initial dependence on unfamiliar supply chains or relatively small supply partners
- Insufficient revenue to offset increased expenses associated with acquisitions
- The potential loss of key employees, customers, distributors, vendors and other business partners of the companies we acquire following and continuing after announcement of acquisition plans

Acquisitions may also cause us to:

- Issue common stock that would dilute our current shareholders’ percentage ownership
- Use a substantial portion of our cash resources, or incur debt
- Significantly increase our interest expense, leverage and debt service requirements if we incur additional debt to pay for an acquisition
- Assume liabilities
- Record goodwill and intangible assets that are subject to impairment testing on a regular basis and potential periodic impairment charges
- Incur amortization expenses related to certain intangible assets
- Incur tax expenses related to the effect of acquisitions on our legal structure
- Incur large write-offs and restructuring and other related expenses
- Become subject to intellectual property or other litigation

Mergers and acquisitions of high-technology companies are inherently risky and subject to many factors outside of our control, and no assurance can be given that our previous or future acquisitions will be successful and will not materially adversely affect our business, operating results, or financial condition. Failure to manage and successfully integrate acquisitions could materially harm our business and operating results. Prior acquisitions have resulted in a wide range of outcomes, from successful introduction of new products and technologies to a failure to do so. Even when an acquired company has already developed and marketed products, there can be no assurance that product enhancements will be made in a timely fashion or that pre-acquisition due diligence will have identified all possible issues that might arise with respect to such products.

In addition, our effective tax rate for future periods is uncertain and could be impacted by mergers and acquisitions. Risks related to new product development also apply to acquisitions. See the risk factors above, including the risk factor entitled “We depend upon the development of new products and services, and enhancements to existing products and services, and if we fail to predict and respond to emerging technological trends and customers’ changing needs, our operating results and market share may suffer” for additional information.

ENTRANCE INTO NEW OR DEVELOPING MARKETS EXPOSES US TO ADDITIONAL COMPETITION AND WILL LIKELY INCREASE DEMANDS ON OUR SERVICE AND SUPPORT OPERATIONS

As we focus on new market opportunities and key priority and growth areas, we will increasingly compete with large telecommunications equipment suppliers as well as startup companies. Several of our competitors may have greater resources, including technical and engineering resources, than we do. Additionally, as customers in these markets complete infrastructure deployments, they may require greater levels of service, support, and financing than we have provided in the past, especially in emerging countries. Demand for these types of service, support, or financing contracts may increase in the future. There can be no assurance that we can provide products, service, support, and financing to effectively compete for these market opportunities.

Further, entry into other markets has subjected and will subject us to additional risks, particularly to those markets, including the effects of general market conditions and reduced consumer confidence. For example, as we add direct selling capabilities globally to meet changing customer demands, we will face increased legal and regulatory requirements.

INDUSTRY CONSOLIDATION MAY LEAD TO INCREASED COMPETITION AND MAY HARM OUR OPERATING RESULTS

There has been a trend toward industry consolidation in our markets for several years. We expect this trend to continue as companies attempt to strengthen or hold their market positions in an evolving industry and as companies are acquired or are unable to continue operations. For example, some of our current and potential competitors for enterprise data center business have made acquisitions, or announced new strategic alliances, designed to position them with the ability to provide end-to-end technology solutions for the enterprise data center. Companies that are strategic alliance partners in some areas of our business may acquire or form alliances with our competitors, thereby reducing their business with us. We believe that industry consolidation may result in stronger competitors that are better able to compete as sole-source vendors for customers. This could lead to more variability in our operating results and could have a material adverse effect on our business, operating results, and financial condition. Furthermore, particularly in the service provider market, rapid consolidation will lead to fewer customers, with the effect that loss of a major customer could have a material impact on results not anticipated in a customer marketplace composed of more numerous participants.

PRODUCT QUALITY PROBLEMS COULD LEAD TO REDUCED REVENUE, GROSS MARGINS, AND NET INCOME

We produce highly complex products that incorporate leading-edge technology, including both hardware and software. Software typically contains bugs that can unexpectedly interfere with expected operations. There can be no assurance that our pre-shipment testing programs will be adequate to detect all defects, either ones in individual products or ones that could affect numerous shipments, which might interfere with customer satisfaction, reduce sales opportunities, or affect gross margins. From time to time, we have had to replace certain components and provide remediation in response to the discovery of defects or bugs in products that we had shipped. There can be no assurance that such remediation, depending on the product involved, would not have a material impact. An inability to cure a product defect could result in the failure of a product line, temporary or permanent withdrawal from a product or market, damage to our reputation, inventory costs, or product reengineering expenses, any of which could have a material impact on our revenue, margins, and net income. For example, in the second quarter of fiscal 2017 we recorded a charge to product cost of sales of \$125 million related to the expected remediation costs for anticipated failures in future periods of a widely-used component sourced from a third party which is included in several of our products, and in the second quarter of fiscal 2014 we recorded a pre-tax charge of \$655 million related to the expected remediation costs for certain products sold in prior fiscal years containing memory components manufactured by a single supplier between 2005 and 2010.

DUE TO THE GLOBAL NATURE OF OUR OPERATIONS, POLITICAL OR ECONOMIC CHANGES OR OTHER FACTORS IN A SPECIFIC COUNTRY OR REGION COULD HARM OUR OPERATING RESULTS AND FINANCIAL CONDITION

We conduct significant sales and customer support operations in countries around the world. As such, our growth depends in part on our increasing sales into emerging countries. We also depend on non-U.S. operations of our contract manufacturers, component suppliers and distribution partners. Our business in emerging countries in the aggregate experienced a decline in orders in the fourth quarter of fiscal 2019, and in certain prior periods. We continue to assess the sustainability of any improvements in our business in these countries and there can be no assurance that our investments in these countries will be successful. Our future results could be materially adversely affected by a variety of political, economic or other factors relating to our operations inside and outside the United States, including impacts from global central bank monetary policy; issues related to the political relationship between the United States and other countries that can affect regulatory matters, affect the willingness of customers in those countries to purchase products from companies headquartered in the United States or affect our ability to procure components if a government body were to deny us access to those components; government-related disruptions or shutdowns; and the challenging

and inconsistent global macroeconomic environment, any or all of which could have a material adverse effect on our operating results and financial condition, including, among others, the following:

- Foreign currency exchange rates
- Political or social unrest
- Economic instability or weakness or natural disasters in a specific country or region, including the current economic challenges in China and global economic ramifications of Chinese economic difficulties; instability as a result of Brexit; environmental protection measures, trade protection measures such as tariffs, and other legal and regulatory requirements, some of which may affect our ability to import our products, to export our products from, or sell our products in various countries or affect our ability to procure components

- Political considerations that affect service provider and government spending patterns
- Health or similar issues, such as a pandemic or epidemic
- Difficulties in staffing and managing international operations
- Adverse tax consequences, including imposition of withholding or other taxes on our global operations

WE ARE EXPOSED TO THE CREDIT RISK OF SOME OF OUR CUSTOMERS AND TO CREDIT EXPOSURES IN WEAKENED MARKETS, WHICH COULD RESULT IN MATERIAL LOSSES

Most of our sales are on an open credit basis, with typical payment terms of 30 days in the United States and, because of local customs or conditions, longer in some markets outside the United States. We monitor individual customer payment capability in granting such open credit arrangements, seek to limit such open credit to amounts we believe the customers can pay, and maintain reserves we believe are adequate to cover exposure for doubtful accounts. Beyond our open credit arrangements, we have also experienced demands for customer financing and facilitation of leasing arrangements.

We believe customer financing is a competitive factor in obtaining business, particularly in serving customers involved in significant infrastructure projects. Our loan financing arrangements may include not only financing the acquisition of our products and services but also providing additional funds for other costs associated with network installation and integration of our products and services.

Our exposure to the credit risks relating to our financing activities described above may increase if our customers are adversely affected by a global economic downturn or periods of economic uncertainty. Although we have programs in place that are designed to monitor and mitigate the associated risk, including monitoring of particular risks in certain geographic areas, there can be no assurance that such programs will be effective in reducing our credit risks.

In the past, there have been significant bankruptcies among customers both on open credit and with loan or lease financing arrangements, particularly among Internet businesses and service providers, causing us to incur economic or financial losses. There can be no assurance that additional losses will not be incurred. Although these losses have not been material to date, future losses, if incurred, could harm our business and have a material adverse effect on our operating results and financial condition. A portion of our sales is derived through our distributors. These distributors are generally given business terms that allow them to return a portion of inventory, receive credits for changes in selling prices, and participate in various cooperative marketing programs. We maintain estimated accruals and allowances for such business terms. However, distributors tend to have more limited financial resources than other resellers and end-user customers and therefore represent potential sources of increased credit risk, because they may be more likely to lack the reserve resources to meet payment obligations. Additionally, to the degree that turmoil in the credit markets makes it more difficult for some customers to obtain financing, those customers' ability to pay could be adversely impacted, which in turn could have a material adverse impact on our business, operating results, and financial condition.

WE ARE EXPOSED TO FLUCTUATIONS IN THE MARKET VALUES OF OUR PORTFOLIO INVESTMENTS AND IN INTEREST RATES; IMPAIRMENT OF OUR INVESTMENTS COULD HARM OUR EARNINGS

We maintain an investment portfolio of various holdings, types, and maturities. Our portfolio includes available-for-sale debt investments and equity investments, the values of which are subject to market price volatility. If such investments suffer market price declines, as we experienced with some of our investments in the past, we may recognize in earnings the decline in the fair value of our investments below their cost basis when the decline is judged to be other than temporary. Our non-marketable equity and other investments are subject to risk of loss of investment capital. These investments are inherently risky because the markets for the technologies or products they have under development are typically in the early stages and may never materialize. We could lose our entire investment in these companies. For information regarding the market risks associated with the fair value of portfolio investments and interest rates, refer to the section titled "Quantitative and Qualitative Disclosures About Market Risk."

WE ARE EXPOSED TO FLUCTUATIONS IN CURRENCY EXCHANGE RATES THAT COULD NEGATIVELY IMPACT OUR FINANCIAL RESULTS AND CASH FLOWS

Because a significant portion of our business is conducted outside the United States, we face exposure to adverse movements in foreign currency exchange rates. These exposures may change over time as business practices evolve, and they could have a material adverse impact on our financial results and cash flows. Historically, our primary exposures have related to nondollar-denominated sales in Japan, Canada, and Australia and certain nondollar-denominated operating expenses and service cost of sales in Europe, Latin America, and Asia, where we sell primarily in U.S. dollars. Additionally, we have exposures to emerging market currencies, which can have extreme currency volatility. An increase in the value of the dollar could increase the real cost to our customers of our products in those markets outside the United States where we sell in dollars and a weakened dollar could increase the cost of local operating expenses and procurement of raw materials to the extent that we must purchase components in foreign currencies.

We enter into foreign exchange forward contracts and options to reduce the short-term impact of foreign currency fluctuations on certain foreign currency receivables, investments, and payables. In addition, we periodically hedge anticipated foreign currency cash flows. Our attempts to hedge against these risks may result in an adverse impact on our net income.

OUR PROPRIETARY RIGHTS MAY PROVE DIFFICULT TO ENFORCE

We generally rely on patents, copyrights, trademarks, and trade secret laws to establish and maintain proprietary rights in our technology and products. Although we have been issued numerous patents and other patent applications are currently pending, there can be no assurance that any of these patents or other proprietary rights will not be challenged, invalidated, or circumvented or that our rights will, in fact, provide competitive advantages to us. Furthermore, many key aspects of networking technology are governed by industrywide standards, which are usable by all market entrants. In addition, there can be no assurance that patents will be issued from pending applications or that claims allowed on any patents will be sufficiently broad to protect our technology. In addition, the laws of some foreign countries may not protect our proprietary rights to the same extent as do the laws of the United States. The outcome of any actions taken in these foreign countries may be different than if such actions were determined under the laws of the United States. Although we are not dependent on any individual patents or group of patents for particular segments of the business for which we compete, if we are unable to protect our proprietary rights to the totality of the features (including aspects of products protected other than by patent rights) in a market, we may find ourselves at a competitive disadvantage to others who need not incur the substantial expense, time, and effort required to create innovative products that have enabled us to be successful.

WE MAY BE FOUND TO INFRINGE ON INTELLECTUAL PROPERTY RIGHTS OF OTHERS

Third parties, including customers, have in the past and may in the future assert claims or initiate litigation related to exclusive patent, copyright, trademark, and other intellectual property rights to technologies and related standards that are relevant to us. These assertions have increased over time as a result of our growth and the general increase in the pace of patent claims assertions, particularly in the United States. Because of the existence of a large number of patents in the networking field, the secrecy of some pending patents, and the rapid rate of issuance of new patents, it is not economically practical or even possible to determine in advance whether a product or any of its components infringes or will infringe on the patent rights of others. The asserted claims and/or initiated litigation can include claims against us or our manufacturers, suppliers, or customers, alleging infringement of their proprietary rights with respect to our existing or future products or components of those products. Regardless of the merit of these claims, they can be time-consuming, result in costly litigation and diversion of technical and management personnel, or require us to develop a non-infringing technology or enter into license agreements. Where claims are made by customers, resistance even to unmeritorious claims could damage customer relationships. There can be no assurance that licenses will be available on acceptable terms and conditions, if at all, or that our indemnification by our suppliers will be adequate to cover our costs if a claim were brought directly against us or our customers. Furthermore, because of the potential for high court awards that are not necessarily predictable, it is not unusual to find even arguably unmeritorious claims settled for significant amounts. If any infringement or other intellectual property claim made against us by any third party is successful, if we are required to indemnify a customer with respect to a claim against the customer, or if we fail to develop non-infringing technology or license the proprietary rights on commercially reasonable terms and conditions, our business, operating results, and financial condition could be materially and adversely affected. For additional information regarding our indemnification obligations, see Note 13(f) to the Consolidated Financial Statements contained in this report.

Our exposure to risks associated with the use of intellectual property may be increased as a result of acquisitions, as we have a lower level of visibility into the development process with respect to such technology or the care taken to safeguard against infringement risks. Further, in the past, third parties have made infringement and similar claims after we have acquired technology that had not been asserted prior to our acquisition.

WE RELY ON THE AVAILABILITY OF THIRD-PARTY LICENSES

Many of our products are designed to include software or other intellectual property licensed from third parties. It may be necessary in the future to seek or renew licenses relating to various aspects of these products. There can be no assurance that the necessary licenses would be available on acceptable terms, if at all. The inability to obtain certain licenses or other rights or to obtain such licenses or rights on favorable terms, or the need to engage in litigation regarding these matters, could have a material adverse effect on our business, operating results, and financial condition. Moreover, the inclusion in our products of software or other intellectual property licensed from third parties on a nonexclusive basis could limit our ability to protect our proprietary rights in our products.

OUR OPERATING RESULTS MAY BE ADVERSELY AFFECTED AND DAMAGE TO OUR REPUTATION MAY OCCUR DUE TO PRODUCTION AND SALE OF COUNTERFEIT VERSIONS OF OUR PRODUCTS

As is the case with leading products around the world, our products are subject to efforts by third parties to produce counterfeit versions of our products. While we work diligently with law enforcement authorities in various countries to block the manufacture of counterfeit goods and to interdict their sale, and to detect counterfeit products in customer networks, and have succeeded in prosecuting counterfeiters and their distributors, resulting in fines, imprisonment and restitution to us, there can be no guarantee that such efforts will succeed. While counterfeiters often aim their sales at customers who might not have otherwise purchased our products due to lack of verifiability of origin and service, such counterfeit sales, to the extent they replace otherwise legitimate sales, could adversely affect our operating results.

OUR OPERATING RESULTS AND FUTURE PROSPECTS COULD BE MATERIALLY HARMED BY UNCERTAINTIES OF REGULATION OF THE INTERNET

Currently, few laws or regulations apply directly to access or commerce on the Internet. We could be materially adversely affected by regulation of the Internet and Internet commerce in any country where we operate. Such regulations could include matters such as voice over the Internet or using IP, encryption technology, sales or other taxes on Internet product or service sales, and access charges for Internet service providers. The adoption of regulation of the Internet and Internet commerce could decrease demand for our products and, at the same time, increase the cost of selling our products, which could have a material adverse effect on our business, operating results, and financial condition.

CHANGES IN TELECOMMUNICATIONS REGULATION AND TARIFFS COULD HARM OUR PROSPECTS AND FUTURE SALES

Changes in telecommunications requirements, or regulatory requirements in other industries in which we operate, in the United States or other countries could affect the sales of our products. In particular, we believe that there may be future changes in U.S. telecommunications regulations that could slow the expansion of the service providers' network infrastructures and materially adversely affect our business, operating results, and financial condition, including "net neutrality" rules to the extent they impact decisions on investment in network infrastructure.

Future changes in tariffs by regulatory agencies or application of tariff requirements to currently untariffed services could affect the sales of our products for certain classes of customers. Additionally, in the United States, our products must comply with various requirements and regulations of the Federal Communications Commission and other regulatory authorities. In countries outside of the United States, our products must meet various requirements of local telecommunications and other industry authorities. Changes in tariffs or failure by us to obtain timely approval of products could have a material adverse effect on our business, operating results, and financial condition.

FAILURE TO RETAIN AND RECRUIT KEY PERSONNEL WOULD HARM OUR ABILITY TO MEET KEY OBJECTIVES

Our success has always depended in large part on our ability to attract and retain highly skilled technical, managerial, sales, and marketing personnel. Competition for these personnel is intense, especially in the Silicon Valley area of Northern California. Stock incentive plans are designed to reward employees for their long-term contributions and provide incentives for them to remain with us. Volatility or lack of positive performance in our stock price or equity incentive awards, or changes to our overall compensation program, including our stock incentive program, resulting from the management of share dilution and share-based compensation expense or otherwise, may also adversely affect our ability to retain key employees. As a result of one or more of these factors, we may increase our hiring in geographic areas outside the United States, which could subject us to additional geopolitical and exchange rate risk. The loss of services of any of our key personnel; the inability to retain and attract qualified personnel in the future; or delays in hiring required personnel, particularly engineering and sales personnel, could make it difficult to meet key objectives, such as timely and effective product introductions. In addition, companies in our industry whose employees accept positions with competitors frequently claim that competitors have engaged in improper hiring practices. We have received these claims in the past and may receive additional claims to this effect in the future.

ADVERSE RESOLUTION OF LITIGATION OR GOVERNMENTAL INVESTIGATIONS MAY HARM OUR OPERATING RESULTS OR FINANCIAL CONDITION

We are a party to lawsuits in the normal course of our business. Litigation can be expensive, lengthy, and disruptive to normal business operations. Moreover, the results of complex legal proceedings are difficult to predict. For example, Brazilian authorities have investigated our Brazilian subsidiary and certain of its former employees, as well as a Brazilian importer of our products, and its affiliates and employees, relating to alleged evasion of import taxes and alleged improper transactions involving the subsidiary and the importer. Brazilian tax authorities have assessed claims against our Brazilian subsidiary based on a theory of joint liability with the Brazilian importer for import taxes, interest, and penalties. The asserted claims by Brazilian federal tax authorities which remain are for calendar years 2003 through 2007, and the asserted claims by the tax authorities from the state

of Sao Paulo are for calendar years 2005 through 2007. The total asserted claims by Brazilian state and federal tax authorities aggregate to \$214 million for the alleged evasion of import and other taxes, \$1.4 billion for interest, and \$1.0 billion for various penalties, all determined using an exchange rate as of July 27, 2019. We have completed a thorough review of the matters and believe the asserted claims against our Brazilian subsidiary are without merit, and we are defending the claims vigorously. While we believe there is no legal basis for the alleged liability, due to the complexities and uncertainty surrounding the judicial process in Brazil and the nature of the claims asserting joint liability with the importer, we are unable to determine the likelihood of an unfavorable outcome against our Brazilian subsidiary and are unable to reasonably estimate a range of loss, if any. We do not expect a final judicial determination for several years. An unfavorable resolution of lawsuits or governmental investigations could have a material adverse effect on our business, operating results, or financial condition. For additional information regarding certain of the matters in which we are involved, see Note 13 to the Consolidated Financial Statements, subsection (g) "Legal Proceedings."

CHANGES IN OUR PROVISION FOR INCOME TAXES OR ADVERSE OUTCOMES RESULTING FROM EXAMINATION OF OUR INCOME TAX RETURNS COULD ADVERSELY AFFECT OUR RESULTS

Our provision for income taxes is subject to volatility and could be adversely affected by earnings being lower than anticipated in countries that have lower tax rates and higher than anticipated in countries that have higher tax rates; by changes in the valuation of our deferred tax assets and liabilities; by changes to domestic manufacturing deduction, foreign-derived intangible income, global intangible low-tax income and base erosion and anti-abuse tax laws, regulations, or interpretations thereof; by expiration of or lapses in tax incentives; by transfer pricing adjustments, including the effect of acquisitions on our legal structure; by tax effects of nondeductible compensation; by tax costs related to intercompany realignments; by changes in accounting principles; or by changes in tax laws and regulations, treaties, or interpretations thereof, including changes to the taxation of earnings of our foreign subsidiaries, the deductibility of expenses attributable to foreign income, and the foreign tax credit rules. Significant judgment is required to determine the recognition and measurement attribute prescribed in the accounting guidance for uncertainty in income taxes. The Organisation for Economic Co-operation and Development (OECD), an international association comprised of 36 countries, including the United States, has made changes to numerous long-standing tax principles. There can be no assurance that these changes, once adopted by countries, will not have an adverse impact on our provision for income taxes. Further, as a result of certain of our ongoing employment and capital investment actions and commitments, our income in certain countries is subject to reduced tax rates. Our failure to meet these commitments could adversely impact our provision for income taxes. In addition, we are subject to the continuous examination of our income tax returns by the Internal Revenue Service and other tax authorities. We regularly assess the likelihood of adverse outcomes resulting from these examinations to determine the adequacy of our provision for income taxes. There can be no assurance that the outcomes from these continuous examinations will not have an adverse effect on our operating results and financial condition.

OUR BUSINESS AND OPERATIONS ARE ESPECIALLY SUBJECT TO THE RISKS OF EARTHQUAKES, FLOODS, AND OTHER NATURAL CATASTROPHIC EVENTS

Our corporate headquarters, including certain of our research and development operations are located in the Silicon Valley area of Northern California, a region known for seismic activity. Additionally, a certain number of our facilities are located near rivers that have experienced flooding in the past. Also certain of our suppliers and logistics centers are located in regions that have been or may be affected by earthquake, tsunami and flooding activity which in the past has disrupted, and in the future could disrupt, the flow of components and delivery of products. A significant natural disaster, such as an earthquake, a hurricane, volcano, or a flood, could have a material adverse impact on our business, operating results, and financial condition.

CYBER-ATTACKS, DATA BREACHES OR MALWARE MAY DISRUPT OUR OPERATIONS, HARM OUR OPERATING RESULTS AND FINANCIAL CONDITION, AND DAMAGE OUR REPUTATION, AND CYBER-ATTACKS OR DATA BREACHES ON OUR CUSTOMERS' NETWORKS, OR IN CLOUD-BASED SERVICES PROVIDED BY OR ENABLED BY US, COULD RESULT IN CLAIMS OF LIABILITY AGAINST US, DAMAGE OUR REPUTATION OR OTHERWISE HARM OUR BUSINESS

Despite our implementation of security measures, the products and services we sell to customers, and our servers, data centers and the cloud-based solutions on which our data, and data of our customers, suppliers and business partners are stored, are vulnerable to cyber-attacks, data breaches, malware, and similar disruptions from unauthorized access or tampering by malicious actors or inadvertent error. Any such event could compromise our products, services, and networks or those of our customers, and the information stored on our systems or those of our customers could be improperly accessed, processed, disclosed, lost or stolen, which could subject us to liability to our customers, suppliers, business partners and others, give rise to legal/regulatory action, and could have a material adverse effect on our business, operating results, and financial condition and may cause damage to our reputation. Efforts to limit the ability of malicious actors to disrupt the operations of the Internet or undermine our own security efforts may be costly to implement and meet with resistance, and may not be successful. Breaches of security in our customers' networks, or in cloud-based services provided by or enabled by us, regardless of whether the breach is attributable to a vulnerability in our products or services, could result in claims of liability against us, damage our reputation or otherwise harm our business.

VULNERABILITIES AND CRITICAL SECURITY DEFECTS, PRIORITIZATION DECISIONS REGARDING REMEDYING VULNERABILITIES OR SECURITY DEFECTS, FAILURE OF THIRD PARTY PROVIDERS TO REMEDY VULNERABILITIES OR SECURITY DEFECTS, OR CUSTOMERS NOT DEPLOYING SECURITY RELEASES OR DECIDING NOT TO UPGRADE PRODUCTS, SERVICES OR SOLUTIONS COULD RESULT IN CLAIMS OF LIABILITY AGAINST US, DAMAGE OUR REPUTATION OR OTHERWISE HARM OUR BUSINESS

The products and services we sell to customers, and our cloud-based solutions, inevitably contain vulnerabilities or critical security defects which have not been remedied and cannot be disclosed without compromising security. We may also make prioritization decisions in determining which vulnerabilities or security defects to fix, and the timing of these fixes, which could result in an exploit which compromises security. Customers also need to test security releases before they can be deployed which can delay implementation. In addition, we rely on third-party providers of software and cloud-based service and we cannot control the rate at which they remedy vulnerabilities. Customers may also not deploy a security release, or decide not to upgrade to the latest versions of our products, services or cloud-based solutions containing the release, leaving them vulnerable. Vulnerabilities and critical security defects, prioritization errors in remedying vulnerabilities or security defects, failure of third-party providers to remedy vulnerabilities or security defects, or customers not deploying security releases or deciding not to upgrade products, services or solutions could result in claims of liability against us, damage our reputation or otherwise harm our business.

TERRORISM AND OTHER EVENTS MAY HARM OUR BUSINESS, OPERATING RESULTS AND FINANCIAL CONDITION

The continued threat of terrorism and heightened security and military action in response to this threat, or any future acts of terrorism, may cause further disruptions to the economies of the United States and other countries and create further uncertainties or otherwise materially harm our business, operating results, and financial condition. Likewise, events such as loss of infrastructure and utilities services such as energy, transportation, or telecommunications could have similar negative impacts. To the extent that such disruptions or uncertainties result in delays or cancellations of customer orders or the manufacture or shipment of our products, our business, operating results, and financial condition could be materially and adversely affected.

IF WE DO NOT SUCCESSFULLY MANAGE OUR STRATEGIC ALLIANCES, WE MAY NOT REALIZE THE EXPECTED BENEFITS FROM SUCH ALLIANCES AND WE MAY EXPERIENCE INCREASED COMPETITION OR DELAYS IN PRODUCT DEVELOPMENT

We have several strategic alliances with large and complex organizations and other companies with which we work to offer complementary products and services and in the past have established a joint venture to market services associated with our Cisco Unified Computing System products. These arrangements are generally limited to specific projects, the goal of which is generally to facilitate product compatibility and adoption of industry standards. There can be no assurance we will realize the expected benefits from these strategic alliances or from the joint venture. If successful, these relationships may be mutually beneficial and result in industry growth. However, alliances carry an element of risk because, in most cases, we must compete in some business areas with a company with which we have a strategic alliance and, at the same time, cooperate with that company in other business areas. Also, if these companies fail to perform or if these relationships fail to materialize as expected, we could suffer delays in product development or other operational difficulties. Joint ventures can be difficult to manage, given the potentially different interests of joint venture partners.

OUR STOCK PRICE MAY BE VOLATILE

Historically, our common stock has experienced substantial price volatility, particularly as a result of variations between our actual financial results and the published expectations of analysts and as a result of announcements by our competitors and us. Furthermore, speculation in the press or investment community about our strategic position, financial condition, results of operations, business, security of our products, or significant transactions can cause changes in our stock price. In addition, the stock market has experienced extreme price and volume fluctuations that have affected the market price of many technology companies, in particular, and that have often been unrelated to the operating performance of these companies. These factors, as well as general economic and political conditions and the announcement of proposed and completed acquisitions or other significant transactions, or any difficulties associated with such transactions, by us or our current or potential competitors, may materially adversely affect the market price of our common stock in the future. Additionally, volatility, lack of positive performance in our stock price or changes to our overall compensation program, including our stock incentive program, may adversely affect our ability to retain key employees, virtually all of whom are compensated, in part, based on the performance of our stock price.

THERE CAN BE NO ASSURANCE THAT OUR OPERATING RESULTS AND FINANCIAL CONDITION WILL NOT BE ADVERSELY AFFECTED BY OUR INCURRENCE OF DEBT

As of the end of fiscal 2019, we have senior unsecured notes outstanding in an aggregate principal amount of \$20.5 billion that mature at specific dates from calendar year 2019 through 2040. We have also established a commercial paper program under which we may issue short-term, unsecured commercial paper notes on a private placement basis up to a maximum aggregate amount outstanding at any time of \$10.0 billion, and we had \$4.2 billion in commercial paper notes outstanding under this program as of July 27, 2019. The outstanding senior unsecured notes bear fixed-rate interest payable semiannually, except \$0.5 billion of the notes which bears interest at a floating rate payable quarterly. The fair value of the long-term debt is subject to market interest rate volatility. The instruments governing the senior unsecured notes contain certain covenants applicable to us and our wholly-owned subsidiaries that may adversely affect our ability to incur certain liens or engage in certain types of sale and leaseback transactions. In addition, we will be required to have available in the United States sufficient cash to service the interest on our debt and repay all of our notes on maturity. There can be no assurance that our incurrence of this debt or any future debt will be a better means of providing liquidity to us than would our use of our existing cash resources. Further, we cannot be assured that our maintenance of this indebtedness or incurrence of future indebtedness will not adversely affect our operating results or financial condition. In addition, changes by any rating agency to our credit rating can negatively impact the value and liquidity of both our debt and equity securities, as well as the terms upon which we may borrow under our commercial paper program or future debt issuances.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Our corporate headquarters are located at an owned site in San Jose, California, in the United States of America. The locations of our headquarters by geographic segment are as follows:

<u>Americas</u>	<u>EMEA</u>	<u>APJC</u>
San Jose, California, USA	Amsterdam, Netherlands	Singapore

In addition to our headquarters site, we own additional sites in the United States, which include facilities in the surrounding areas of San Jose, California; Research Triangle Park, North Carolina; Richardson, Texas; Lawrenceville, Georgia; and Boxborough, Massachusetts. We also own land for expansion in some of these locations. In addition, we lease office space in many U.S. locations.

Outside the United States our operations are conducted primarily in leased sites. Other significant sites (in addition to the two non-U.S. headquarters locations) are located in Australia, Belgium, Canada, China, Germany, India, Japan, Mexico, Poland, and the United Kingdom.

We believe that our existing facilities, including both owned and leased, are in good condition and suitable for the conduct of our business. For additional information regarding obligations under operating leases, see Note 13 to the Consolidated Financial Statements.

Item 3. Legal Proceedings

For a description of our material pending legal proceedings, see Note 13 “Commitments and Contingencies - (g) Legal Proceedings” of the Notes to Consolidated Financial Statements included in Item 8 of this Annual Report on Form 10-K, which is incorporated herein by reference.

Item 4. Mine Safety Disclosures

Not applicable.

PART II**Item 5. Market for Registrant's Common Equity, Related Stockholder Matters, and Issuer Purchases of Equity Securities**

- (a) Cisco common stock is traded on the Nasdaq Global Select Market under the symbol CSCO. Information regarding quarterly cash dividends declared on Cisco's common stock during fiscal 2019 and 2018 may be found in Supplementary Financial Data on page 106 of this report. There were 39,216 registered shareholders as of August 30, 2019.
- (b) Not applicable.
- (c) Issuer purchases of equity securities (in millions, except per-share amounts):

Period	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value of Shares That May Yet Be Purchased Under the Plans or Programs
April 28, 2019 to May 25, 2019	42	\$ 54.33	42	\$ 15,700
May 26, 2019 to June 22, 2019	22	\$ 55.07	22	\$ 14,465
June 23, 2019 to July 27, 2019	18	\$ 56.46	18	\$ 13,460
Total	82	\$ 54.99	82	

On September 13, 2001, we announced that our Board of Directors had authorized a stock repurchase program. On February 13, 2019, our Board of Directors authorized a \$15 billion increase to the stock repurchase program. As of July 27, 2019, the remaining authorized amount for stock repurchases under this program, including the additional authorization, is approximately \$13.5 billion with no termination date.

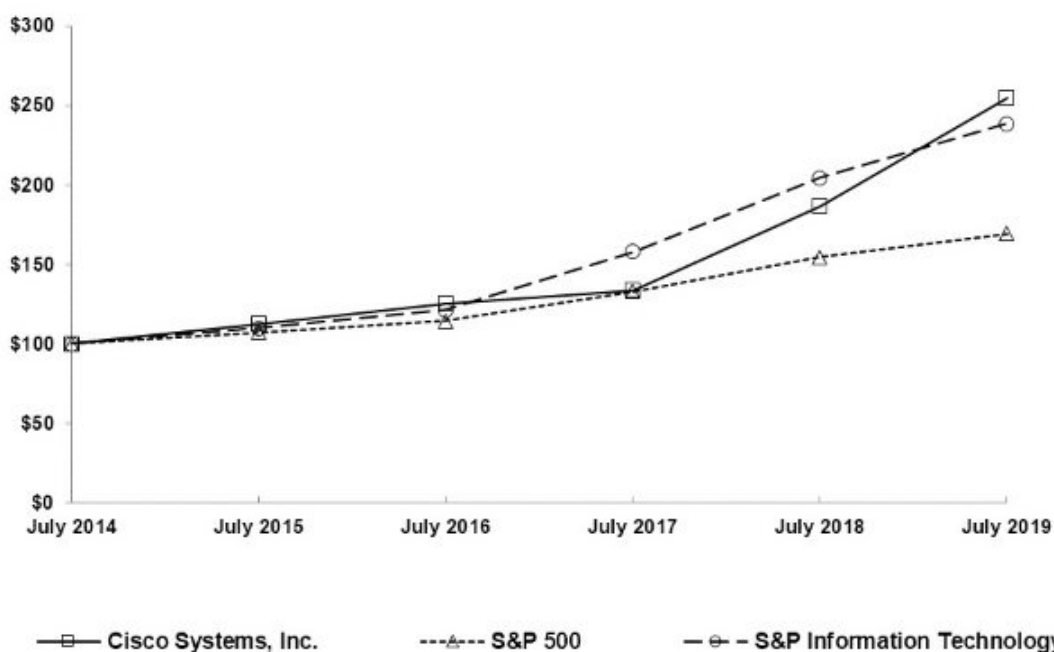
For the majority of restricted stock units granted, the number of shares issued on the date the restricted stock units vest is net of shares withheld to meet applicable tax withholding requirements. Although these withheld shares are not issued or considered common stock repurchases under our stock repurchase program and therefore are not included in the preceding table, they are treated as common stock repurchases in our financial statements as they reduce the number of shares that would have been issued upon vesting (see Note 14 to the Consolidated Financial Statements).

Stock Performance Graph

The information contained in this Stock Performance Graph section shall not be deemed to be “soliciting material” or “filed” or incorporated by reference in future filings with the SEC, or subject to the liabilities of Section 18 of the Securities Exchange Act of 1934, except to the extent that Cisco specifically incorporates it by reference into a document filed under the Securities Act of 1933 or the Securities Exchange Act of 1934.

The following graph shows a five-year comparison of the cumulative total shareholder return on Cisco common stock with the cumulative total returns of the S&P 500 Index, and the S&P Information Technology Index. The graph tracks the performance of a \$100 investment in the Company’s common stock and in each of the indexes (with the reinvestment of all dividends) on the date specified. Shareholder returns over the indicated period are based on historical data and should not be considered indicative of future shareholder returns.

Comparison of 5-Year Cumulative Total Return Among Cisco Systems, Inc., the S&P 500 Index, and the S&P Information Technology Index



	July 2014	July 2015	July 2016	July 2017	July 2018	July 2019
Cisco Systems, Inc.	\$ 100.00	\$ 112.65	\$ 125.33	\$ 133.97	\$ 186.77	\$ 254.88
S&P 500	\$ 100.00	\$ 107.29	\$ 114.65	\$ 133.14	\$ 154.77	\$ 169.53
S&P Information Technology	\$ 100.00	\$ 110.14	\$ 121.26	\$ 157.85	\$ 204.74	\$ 238.65

Item 6. Selected Financial Data

Five Years Ended July 27, 2019 (in millions, except per-share amounts)

Years Ended	July 27, 2019 ⁽¹⁾⁽²⁾	July 28, 2018 ⁽¹⁾⁽³⁾	July 29, 2017	July 30, 2016 ⁽⁴⁾⁽⁵⁾	July 25, 2015 ⁽⁴⁾
Revenue	\$ 51,904	\$ 49,330	\$ 48,005	\$ 49,247	\$ 49,161
Net income	\$ 11,621	\$ 110	\$ 9,609	\$ 10,739	\$ 8,981
Net income per share—basic	\$ 2.63	\$ 0.02	\$ 1.92	\$ 2.13	\$ 1.76
Net income per share—diluted	\$ 2.61	\$ 0.02	\$ 1.90	\$ 2.11	\$ 1.75
Shares used in per-share calculation—basic	4,419	4,837	5,010	5,053	5,104
Shares used in per-share calculation—diluted	4,453	4,881	5,049	5,088	5,146
Cash dividends declared per common share	\$ 1.36	\$ 1.24	\$ 1.10	\$ 0.94	\$ 0.80
Net cash provided by operating activities	\$ 15,831	\$ 13,666	\$ 13,876	\$ 13,570	\$ 12,552
	July 27, 2019	July 28, 2018	July 29, 2017	July 30, 2016	July 25, 2015
Cash and cash equivalents and investments	\$ 33,413	\$ 46,548	\$ 70,492	\$ 65,756	\$ 60,416
Total assets	\$ 97,793	\$ 108,784	\$ 129,818	\$ 121,652	\$ 113,373
Debt	\$ 24,666	\$ 25,569	\$ 33,717	\$ 28,643	\$ 25,354
Deferred revenue	\$ 18,467	\$ 19,685	\$ 18,494	\$ 16,472	\$ 15,183

- (1) In the second quarter of fiscal 2019, we completed the sale of the Service Provider Video Software Solutions (SPVSS) business. As a result, revenue from the SPVSS business will not recur in future periods. We recognized an immaterial gain from this transaction. Revenue for the years ended July 27, 2019 and July 28, 2018 include SPVSS revenue of \$168 million and \$903 million, respectively.
- (2) In connection with the Tax Cuts and Jobs Act (“the Tax Act”), we recorded an \$872 million charge which was the reversal of the previously recorded benefit associated with the U.S. taxation of deemed foreign dividends recorded in fiscal 2018 as a result of a retroactive final U.S. Treasury regulation issued during the fourth quarter of fiscal 2019. See Note 17 to the Consolidated Financial Statements.
- (3) In fiscal 2018, Cisco recorded a provisional tax expense of \$10.4 billion related to the enactment of the Tax Act comprised of \$8.1 billion of U.S. transition tax, \$1.2 billion of foreign withholding tax, and \$1.1 billion re-measurement of net deferred tax assets and liabilities (DTA).
- (4) In the second quarter of fiscal 2016, Cisco completed the sale of the SP Video CPE Business. As a result, revenue from this portion of the Service Provider Video product category did not recur in future periods. The sale resulted in a pre-tax gain of \$253 million net of certain transaction costs. The years ended July 30, 2016 and July 25, 2015 include SP Video CPE Business revenue of \$504 million and \$1,846 million, respectively.
- (5) In fiscal 2016 Cisco recognized total tax benefits of \$593 million for the following: i) the Internal Revenue Service (IRS) and Cisco settled all outstanding items related to Cisco’s federal income tax returns for fiscal 2008 through fiscal 2010, as a result of which Cisco recorded a net tax benefit of \$367 million; and ii) the Protecting Americans from Tax Hikes Act of 2015 reinstated the U.S. federal research and development (R&D) tax credit permanently, as a result of which Cisco recognized tax benefits of \$226 million, of which \$81 million related to fiscal 2015 R&D expenses.

At the beginning of fiscal 2019, we adopted Accounting Standards Codification (ASC) 606, a new accounting standard related to revenue recognition, using the modified retrospective method to those contracts that were not completed as of July 28, 2018. See Note 2 to the Consolidated Financial Statements for the impact of this adoption.

No other factors materially affected the comparability of the information presented above.

Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations
Forward-Looking Statements

This Annual Report on Form 10-K, including this Management’s Discussion and Analysis of Financial Condition and Results of Operations, contains forward-looking statements regarding future events and our future results that are subject to the safe harbors created under the Securities Act of 1933 (the “Securities Act”) and the Securities Exchange Act of 1934 (the “Exchange Act”). All statements other than statements of historical facts are statements that could be deemed forward-looking statements. These statements are based on current expectations, estimates, forecasts, and projections about the industries in which we operate and the beliefs and assumptions of our management. Words such as “expects,” “anticipates,” “targets,” “goals,” “projects,” “intends,” “plans,” “believes,” “momentum,” “seeks,” “estimates,” “continues,” “endeavors,” “strives,” “may,” variations of such words, and similar expressions are intended to identify such forward-looking statements. In addition, any statements that refer to projections of our future financial performance, our anticipated growth and trends in our businesses, and other characterizations of future events or circumstances are forward-looking statements. Readers are cautioned that these forward-looking statements are only predictions and are subject to risks, uncertainties, and assumptions that are difficult to predict, including those under “Part I, Item 1A. Risk Factors,” and elsewhere herein. Therefore, actual results may differ materially and adversely from those expressed in any forward-looking statements. We undertake no obligation to revise or update any forward-looking statements for any reason.

OVERVIEW

Cisco designs and sells a broad range of technologies that have been powering the Internet since 1984. Across networking, security, collaboration, applications and the cloud, we are integrating intent-based technologies to help our customers manage more users, devices and things connecting to their networks. This will enable us to provide customers with a highly secure, intelligent platform for their digital business.

A summary of our results is as follows (in millions, except percentages and per-share amounts):

	Three Months Ended			Years Ended		
	July 27, 2019	July 28, 2018	Variance	July 27, 2019	July 28, 2018	Variance
Revenue ⁽¹⁾	\$ 13,428	\$ 12,844	5 %	\$ 51,904	\$ 49,330	5 %
Gross margin percentage	63.9%	61.7 %	2.2 pts	62.9%	62.0%	0.9 pts
Research and development	\$ 1,753	\$ 1,626	8 %	\$ 6,577	\$ 6,332	4 %
Sales and marketing	\$ 2,487	\$ 2,348	6 %	\$ 9,571	\$ 9,242	4 %
General and administrative	\$ 566	\$ 543	4 %	\$ 1,827	\$ 2,144	(15)%
Total R&D, sales and marketing, general and administrative	\$ 4,806	\$ 4,517	6 %	\$ 17,975	\$ 17,718	1 %
Total as a percentage of revenue	35.8%	35.2 %	0.6 pts	34.6%	35.9%	(1.3) pts
Amortization of purchased intangible assets included in operating expenses	\$ 38	\$ 33	15 %	\$ 150	\$ 221	(32)%
Restructuring and other charges included in operating expenses	\$ 40	\$ 26	54 %	\$ 322	\$ 358	(10)%
Operating income as a percentage of revenue	27.5%	26.1 %	1.4 pts	27.4%	25.0%	2.4 pts
Interest and other income (loss), net	\$ 14	\$ 246	(94)%	\$ 352	\$ 730	(52)%
Income tax percentage ⁽²⁾	40.4%	(5.9)%	46.3 pts	20.2%	99.2%	NM
Net income ⁽²⁾	\$ 2,206	\$ 3,803	(42)%	\$ 11,621	\$ 110	NM
Net income as a percentage of revenue	16.4%	29.6 %	(13.2) pts	22.4%	0.2%	NM
Earnings per share—diluted ⁽²⁾	\$ 0.51	\$ 0.81	(37)%	\$ 2.61	\$ 0.02	NM

We adopted ASC 606 in the first quarter of fiscal 2019 using the modified retrospective method. See Note 2 to the Consolidated Financial Statements for impact of this adoption on our operating results in fiscal 2019.

⁽¹⁾ During the second quarter of fiscal 2019, we completed the sale of our SPVSS business. As a result, revenue from this business will not recur in future periods. Includes SPVSS business revenue of \$0 and \$206 million for the fourth quarter of fiscal 2019 and 2018, respectively, and \$168 million and \$903 million for fiscal 2019 and 2018, respectively.

⁽²⁾ Includes a \$0.9 billion charge and a \$0.9 billion benefit for the fourth quarter of fiscal 2019 and 2018, respectively, and charges of \$0.9 billion and \$10.4 billion for fiscal 2019 and 2018, respectively, related to the Tax Act.

NM - Not meaningful

Fiscal 2019 Compared with Fiscal 2018

In fiscal 2019, we had strong performance across the business and delivered growth in revenue, margins, net income, earnings per share and operating cash flow. We remain focused on accelerating innovation across our portfolio, and we believe that we have made continued progress on our strategic priorities. Our product revenue reflected growth in Infrastructure Platforms, Applications and Security, and we continued to make progress in the transition of our business model to increased software and subscriptions. Notwithstanding the fiscal 2019 results, we continue to operate in a challenging and highly competitive environment. We expect ongoing uncertainty in the service provider customer market. While the overall environment remains uncertain, we continue to aggressively invest in priority areas with the objective of driving profitable growth over the long term.

Total revenue increased by 5% compared with fiscal 2018. Within total revenue, product revenue increased 6% and service revenue increased by 2%. In the second quarter of fiscal 2019, on October 28, 2018, we completed the sale of our SPVSS business. Total revenue for fiscal 2019 increased 7% not including revenue from the SPVSS business for fiscal 2019 and fiscal 2018. Total gross margin increased by 0.9 percentage points, driven primarily by productivity benefits partially offset by unfavorable impacts from pricing and mix. Our gross margin also benefited from the sale of our lower margin SPVSS business during the second quarter of fiscal 2019 and the \$127 million legal and indemnification settlement charge recorded in fiscal 2018. As a percentage of revenue, research and development, sales and marketing, and general and administrative expenses, collectively, decreased by 1.3 percentage points. Operating income as a percentage of revenue increased by 2.4 percentage points. Net income and diluted earnings per share for fiscal 2018 included the one-time transition tax on accumulated earnings of foreign subsidiaries, foreign withholding taxes, and re-measurement of net deferred tax assets and liabilities as related to the Tax Act.

In terms of our geographic segments, revenue from the Americas increased by \$1.9 billion, driven in large part by product revenue growth in the United States. EMEA revenue increased by \$0.7 billion and revenue in our APJC segment increased slightly. The “BRICM” countries experienced a product revenue decline of 1% in the aggregate, driven by a 16% decrease in product revenue in China. This decrease was partially offset by increased product revenue in Mexico, Russia and India of 26%, 6%, and 5%, respectively.

From a customer market standpoint, we experienced product revenue growth in the enterprise, public sector and commercial markets, partially offset by a product revenue decline in the service provider market.

From a product category perspective, total product revenue, not including SPVSS products in the prior year, increased 8% year over year. The increase was driven by growth in Security and Applications of 16% and 15%, respectively. We also experienced a 7% product revenue increase in Infrastructure Platforms.

Fourth Quarter Snapshot

For the fourth quarter of fiscal 2019, as compared with the fourth quarter of fiscal 2018, total revenue increased by 5%. Within total revenue, product revenue increased by 5% and service revenue increased by 3%. With regard to our geographic segment performance, on a year-over-year basis, revenue in the Americas and EMEA increased by 8% and 4%, respectively, while revenue in APJC decreased by 5%. From a product category perspective, we experienced broad strength across the portfolio. We experienced weakness in the service provider market due to ongoing uncertainty in that market. Total gross margin increased by 2.2 percentage points, driven by improved productivity benefits and favorable product mix partially offset by unfavorable pricing. As a percentage of revenue, research and development, sales and marketing, and general and administrative expenses collectively increased by 0.6 percentage points. Operating income as a percentage of revenue increased by 1.4 percentage points. Diluted earnings per share decreased by 37% and net income decreased by 42%, due to a \$0.9 billion tax charge and \$0.9 billion tax benefit for the fourth quarter of fiscal 2019 and 2018, respectively, related to the Tax Act.

Strategy and Priorities

As our customers add billions of new connections to their enterprises, and as more applications move to a multicloud environment, the network continues to be extremely critical. We believe that our customers are looking for intent-based networks that provide meaningful business value through automation, security, and analytics across private, hybrid, and multicloud environments. Our vision is to deliver highly secure, software-defined, automated and intelligent platforms for our customers. Our strategic priorities include the following: accelerating our pace of innovation, increasing the value of the network, and transforming our business model.

For a full discussion of our strategy and priorities, see “Item 1. Business.”

Other Key Financial Measures

The following is a summary of our other key financial measures for fiscal 2019 compared with fiscal 2018 (in millions):

	Fiscal 2019	Fiscal 2018
Cash and cash equivalents and investments	\$33,413	\$46,548
Cash provided by operating activities	\$15,831	\$13,666
Deferred revenue ⁽¹⁾	\$18,467	\$19,685
Repurchases of common stock—stock repurchase program	\$20,577	\$17,661
Dividends	\$5,979	\$5,968
Inventories	\$1,383	\$1,846

⁽¹⁾ Deferred revenue decreased primarily due to the adoption of ASC 606 in the beginning of our first quarter of fiscal 2019. See Note 2 to the Consolidated Financial Statements for the impact of this adoption.

CRITICAL ACCOUNTING ESTIMATES

The preparation of financial statements and related disclosures in conformity with accounting principles generally accepted in the United States requires us to make judgments, assumptions, and estimates that affect the amounts reported in the Consolidated Financial Statements and accompanying notes. Note 2 to the Consolidated Financial Statements describes the significant accounting policies and methods used in the preparation of the Consolidated Financial Statements. The accounting policies described below are significantly affected by critical accounting estimates. Such accounting policies require significant judgments, assumptions, and estimates used in the preparation of the Consolidated Financial Statements, and actual results could differ materially from the amounts reported based on these policies.

Revenue Recognition

In May 2014, the Financial Accounting Standards Board (FASB) issued ASC 606, Revenue from Contracts with Customers, a new accounting standard related to revenue recognition. ASC 606 supersedes nearly all U.S. GAAP on revenue recognition and eliminated industry-specific guidance. The underlying principle of ASC 606 is to recognize revenue when a customer obtains control of promised goods or services at an amount that reflects the consideration that is expected to be received in exchange for those goods or services.

ASC 606 allowed two methods of adoption: i) retrospectively to each prior period presented (“full retrospective method”), or ii) retrospectively with the cumulative effect recognized in retained earnings as of the date of adoption (“modified retrospective method”). At the beginning of our first quarter of fiscal 2019, we adopted ASC 606 using the modified retrospective method to those contracts that were not completed as of July 28, 2018.

ASC 606 primarily impacted our revenue recognition for software arrangements and sales to two-tier distributors. In both areas, the new standard accelerates the recognition of revenue.

We enter into contracts with customers that can include various combinations of products and services which are generally distinct and accounted for as separate performance obligations. As a result, our contracts may contain multiple performance obligations. We determine whether arrangements are distinct based on whether the customer can benefit from the product or service on its own or together with other resources that are readily available and whether our commitment to transfer the product or service to the customer is separately identifiable from other obligations in the contract. We classify our hardware, perpetual software licenses, and software-as-a-service (SaaS) as distinct performance obligations. Term software licenses represent multiple obligations, which include software licenses and software maintenance. In transactions where we deliver hardware or software, we are typically the principal and we record revenue and costs of goods sold on a gross basis.

We recognize revenue upon transfer of control of promised goods or services in a contract with a customer in an amount that reflects the consideration we expect to receive in exchange for those products or services. Transfer of control occurs once the customer has the contractual right to use the product, generally upon shipment or once title and risk of loss has transferred to the customer. Transfer of control can also occur over time for software maintenance and services as the customer receives the benefit over the contract term. Our hardware and perpetual software licenses are distinct performance obligations where revenue is recognized upfront upon transfer of control. Term software licenses include multiple performance obligations where the term licenses are recognized upfront upon transfer of control, with the associated software maintenance revenue recognized ratably over the contract term as services and software updates are provided. SaaS arrangements do not include the right for the customer to take possession of the software during the term, and therefore have one distinct performance obligation which is satisfied over time with revenue recognized ratably over the contract term as the customer consumes the services. On our product sales, we record consideration from shipping and handling on a gross basis within net product sales. We record our revenue net of any associated sales taxes.

Revenue is allocated among these performance obligations in a manner that reflects the consideration that we expect to be entitled to for the promised goods or services based on standalone selling prices (SSP). SSP is estimated for each distinct performance obligation and judgment may be required in their determination. The best evidence of SSP is the observable price of a product or service when we sell the goods separately in similar circumstances and to similar customers. In instances where SSP is not directly observable, we determine SSP using information that may include market conditions and other observable inputs.

We apply judgment in determining the transaction price as we may be required to estimate variable consideration when determining the amount of revenue to recognize. Variable consideration includes various rebate, cooperative marketing, potential penalties and other incentive programs that we offer to our distributors, partners and customers. When determining the amount of revenue to recognize, we estimate the expected usage of these programs, applying the expected value or most likely estimate and update the estimate at each reporting period as actual utilization becomes available. We also consider the customers' right of return in determining the transaction price, where applicable. If actual credits received by distributors under these programs were to deviate significantly from our estimates, which are based on historical experience, our revenue could be adversely affected.

See Notes 2 and 3 to the Consolidated Financial Statements for more details.

Allowances for Receivables and Sales Returns

The allowances for receivables were as follows (in millions, except percentages):

	July 27, 2019	July 28, 2018
Allowance for doubtful accounts	\$ 136	\$ 129
<i>Percentage of gross accounts receivable</i>	<i>2.4%</i>	<i>2.3%</i>
Allowance for credit loss—lease receivables	\$ 46	\$ 135
<i>Percentage of gross lease receivables ⁽¹⁾</i>	<i>1.8%</i>	<i>4.7%</i>
Allowance for credit loss—loan receivables	\$ 71	\$ 60
<i>Percentage of gross loan receivables</i>	<i>1.3%</i>	<i>1.2%</i>

⁽¹⁾ Calculated as allowance for credit loss on lease receivables as a percentage of gross lease receivables and residual value before unearned income.

The allowance for doubtful accounts is based on our assessment of the collectibility of customer accounts. We regularly review the adequacy of these allowances by considering internal factors such as historical experience, credit quality and age of the receivable balances as well as external factors such as economic conditions that may affect a customer's ability to pay as well as historical and expected default frequency rates, which are published by major third-party credit-rating agencies and are updated on a quarterly basis. We also consider the concentration of receivables outstanding with a particular customer in assessing the adequacy of our allowances for doubtful accounts. If a major customer's creditworthiness deteriorates, if actual defaults are higher than our historical experience, or if other circumstances arise, our estimates of the recoverability of amounts due to us could be overstated, and additional allowances could be required, which could have an adverse impact on our operating results.

The allowance for credit loss on financing receivables is also based on the assessment of collectibility of customer accounts. We regularly review the adequacy of the credit allowances determined either on an individual or a collective basis. When evaluating the financing receivables on an individual basis, we consider historical experience, credit quality and age of receivable balances, and economic conditions that may affect a customer's ability to pay. When evaluating financing receivables on a collective basis, we use expected default frequency rates published by a major third-party credit-rating agency as well as our own historical loss rate in the event of default, while also systematically giving effect to economic conditions, concentration of risk and correlation. Determining expected default frequency rates and loss factors associated with internal credit risk ratings, as well as assessing factors such as economic conditions, concentration of risk, and correlation, are complex and subjective. Our ongoing consideration of all these factors could result in an increase in our allowance for credit loss in the future, which could adversely affect our operating results. Both accounts receivable and financing receivables are charged off at the point when they are considered uncollectible.

A reserve for future sales returns is established based on historical trends in product return rates. The reserve for future sales returns as of July 27, 2019 and July 28, 2018 was \$84 million and \$123 million, respectively, and was recorded as a reduction of our accounts receivable and revenue. If the actual future returns were to deviate from the historical data on which the reserve had been established, our revenue could be adversely affected.

Inventory Valuation and Liability for Purchase Commitments with Contract Manufacturers and Suppliers

Inventory is written down based on excess and obsolete inventories, determined primarily by future demand forecasts. Inventory write-downs are measured as the difference between the cost of the inventory and market, based upon assumptions about future demand, and are charged to the provision for inventory, which is a component of our cost of sales. At the point of the loss recognition, a new, lower cost basis for that inventory is established, and subsequent changes in facts and circumstances do not result in the restoration or increase in that newly established cost basis.

We record a liability for firm, noncancelable, and unconditional purchase commitments with contract manufacturers and suppliers for quantities in excess of our future demand forecasts consistent with the valuation of our excess and obsolete inventory.

Our provision for inventory was \$77 million, \$63 million, and \$74 million in fiscal 2019, 2018, and 2017, respectively. The provision for the liability related to purchase commitments with contract manufacturers and suppliers was \$95 million, \$105 million, and \$124 million in fiscal 2019, 2018, and 2017, respectively. If there were to be a sudden and significant decrease in demand for our products, or if there were a higher incidence of inventory obsolescence because of rapidly changing technology and customer requirements, we could be required to increase our inventory write-downs, and our liability for purchase commitments with contract manufacturers and suppliers, and accordingly our profitability, could be adversely affected. We regularly evaluate our exposure for inventory write-downs and the adequacy of our liability for purchase commitments.

Loss Contingencies and Product Warranties

We are subject to the possibility of various losses arising in the ordinary course of business. We consider the likelihood of impairment of an asset or the incurrence of a liability, as well as our ability to reasonably estimate the amount of loss, in determining loss contingencies. An estimated loss contingency is accrued when it is probable that an asset has been impaired or a liability has been incurred and the amount of loss can be reasonably estimated. We regularly evaluate information available to us to determine whether such accruals should be made or adjusted and whether new accruals are required.

Third parties, including customers, have in the past and may in the future assert claims or initiate litigation related to exclusive patent, copyright, trademark, and other intellectual property rights to technologies and related standards that are relevant to us. These assertions have increased over time as a result of our growth and the general increase in the pace of patent claims assertions, particularly in the United States. If any infringement or other intellectual property claim made against us by any third party is successful, or if we fail to develop non-infringing technology or license the proprietary rights on commercially reasonable terms and conditions, our business, operating results, and financial condition could be materially and adversely affected.

Our products are generally covered by a warranty for periods ranging from 90 days to five years, and for some products we provide a limited lifetime warranty. We accrue for warranty costs as part of our cost of sales based on associated material costs, technical support labor costs, and associated overhead. Material cost is estimated based primarily upon historical trends in the volume of product returns within the warranty period and the cost to repair or replace the equipment. Technical support labor cost is estimated based primarily upon historical trends in the rate of customer cases and the cost to support the customer cases within the warranty period. Overhead cost is applied based on estimated time to support warranty activities.

If we experience an increase in warranty claims compared with our historical experience, or if the cost of servicing warranty claims is greater than expected, our profitability could be adversely affected.

Impairment of Investments

We recognize an impairment charge when the declines in the fair values of our available-for-sale debt investments below their cost basis are judged to be other than temporary. The ultimate value realized on these securities, to the extent unhedged, is subject to market price volatility until they are sold.

If the fair value of a debt security is less than its amortized cost, we assess whether the impairment is other than temporary. An impairment is considered other than temporary if (i) we have the intent to sell the security, (ii) it is more likely than not that we will be required to sell the security before recovery of its entire amortized cost basis, or (iii) we do not expect to recover the entire amortized cost of the security. If an impairment is considered other than temporary based on (i) or (ii) described in the prior sentence, the entire difference between the amortized cost and the fair value of the security is recognized in earnings. If an impairment is considered other than temporary based on condition (iii), the amount representing credit loss, defined as the difference between the present value of the cash flows expected to be collected and the amortized cost basis of the debt security, will be recognized in earnings, and the amount relating to all other factors will be recognized in other comprehensive income (OCI). In estimating the amount and timing of cash flows expected to be collected, we consider all available information, including past events, current conditions, the remaining payment terms of the security, the financial condition of the issuer, expected defaults, and the value of underlying collateral.

We hold non-marketable equity and other investments, some of which are in startup or development stage companies. As of July 27, 2019, our non-marketable equity and other investments were \$1.2 billion, compared with \$1.1 billion as of July 28, 2018, and were included in other assets. We monitor these investments for events or circumstances indicative of potential impairment, and we make appropriate reductions in carrying values if we determine that an impairment charge is required, based primarily on the financial condition and near-term prospects of these companies. These investments are inherently risky because the markets for the technologies or products these companies are developing are typically in the early stages and may never materialize.

Goodwill and Purchased Intangible Asset Impairments

Our methodology for allocating the purchase price relating to purchase acquisitions is determined through established valuation techniques. Goodwill represents a residual value as of the acquisition date, which in most cases results in measuring goodwill as an excess of the purchase consideration transferred plus the fair value of any noncontrolling interest in the acquired company over the fair value of net assets acquired, including contingent consideration. We perform goodwill impairment tests on an annual basis in the fourth fiscal quarter and between annual tests in certain circumstances for each reporting unit. The assessment of fair value for goodwill and purchased intangible assets is based on factors that market participants would use in an orderly transaction in accordance with the new accounting guidance for the fair value measurement of nonfinancial assets.

The goodwill recorded in the Consolidated Balance Sheets as of July 27, 2019 and July 28, 2018 was \$33.5 billion and \$31.7 billion, respectively. The increase in goodwill during fiscal 2019 was due in large part to our acquisition of Duo Security, Inc. In response to changes in industry and market conditions, we could be required to strategically realign our resources and consider restructuring, disposing of, or otherwise exiting businesses, which could result in an impairment of goodwill. There was no impairment of goodwill in fiscal 2019, 2018, and 2017. For the annual impairment testing in fiscal 2019, the excess of the fair value over the carrying value for each of our reporting units was \$69.2 billion for the Americas, \$56.3 billion for EMEA, and \$32.2 billion for APJC.

During the fourth quarter of fiscal 2019, we performed a sensitivity analysis for goodwill impairment with respect to each of our respective reporting units and determined that a hypothetical 10% decline in the fair value of each reporting unit would not result in an impairment of goodwill for any reporting unit.

The fair value of acquired technology and patents, as well as acquired technology under development, is determined at acquisition date primarily using the income approach, which discounts expected future cash flows to present value. The discount rates used in the present value calculations are typically derived from a weighted-average cost of capital analysis and then adjusted to reflect risks inherent in the development lifecycle as appropriate. We consider the pricing model for products related to these acquisitions to be standard within the high-technology communications industry, and the applicable discount rates represent the rates that market participants would use for valuation of such intangible assets.

We make judgments about the recoverability of purchased intangible assets with finite lives whenever events or changes in circumstances indicate that an impairment may exist. Recoverability of purchased intangible assets with finite lives is measured by comparing the carrying amount of the asset to the future undiscounted cash flows the asset is expected to generate. We review indefinite-lived intangible assets for impairment annually or whenever events or changes in circumstances indicate that the asset might be impaired. If the asset is considered to be impaired, the amount of any impairment is measured as the difference between the carrying value and the fair value of the impaired asset. Assumptions and estimates about future values and remaining useful lives of our purchased intangible assets are complex and subjective. They can be affected by a variety of factors, including external factors such as industry and economic trends, and internal factors such as changes in our business strategy and our internal forecasts. Impairment charges related to purchased intangible assets was approximately \$47 million for fiscal 2017. Our ongoing consideration of all the factors described previously could result in additional impairment charges in the future, which could adversely affect our net income.

Income Taxes

We are subject to income taxes in the United States and numerous foreign jurisdictions. Our effective tax rates differ from the statutory rate, primarily due to the tax impact of state taxes, foreign operations, R&D tax credits, domestic manufacturing deductions, foreign-derived intangible income deductions, global intangible low-taxed income, tax audit settlements, nondeductible compensation, international realignments, and transfer pricing adjustments. Our effective tax rate was 20.2%, 99.2%, and 21.8% in fiscal 2019, 2018, and 2017, respectively.

On December 22, 2017, the Tax Act was enacted. The Tax Act significantly revises the U.S. corporate income tax by, among other things, lowering the statutory corporate income tax rate (“federal tax rate”) from 35% to 21% effective January 1, 2018, implementing a modified territorial tax system, and imposing a mandatory one-time transition tax on accumulated earnings of foreign subsidiaries. As a result of the Tax Act enactment, we recorded a provisional tax expense of \$10.4 billion in fiscal 2018. The provisional tax expense included an \$863 million benefit associated with the U.S. taxation of deemed foreign dividends in the transition fiscal year. As previously disclosed, the benefit could be subject to reduction or elimination by subsequent government action. In the fourth quarter of fiscal 2019 we recorded an \$872 million charge, which was the reversal of the previously recorded benefit associated with the U.S. taxation of deemed foreign dividends recorded in fiscal 2018, as a result of a retroactive final U.S. Treasury regulation issued during the quarter. The total tax charge as a result of the Tax Act was \$11.3 billion, consisting of \$9 billion of tax expense for the U.S. transition tax on accumulated earnings of foreign subsidiaries, \$1.2 billion of foreign withholding tax, and \$1.1 billion of tax expense for DTA re-measurement.

Significant judgment is required in evaluating our uncertain tax positions and determining our provision for income taxes. Although we believe our reserves are reasonable, no assurance can be given that the final tax outcome of these matters will not be different from that which is reflected in our historical income tax provisions and accruals. We adjust these reserves in light of changing facts and circumstances, such as the closing of a tax audit or the refinement of an estimate. To the extent that the final tax outcome of these matters is different than the amounts recorded, such differences will impact the provision for income taxes in the period in which such determination is made. The provision for income taxes includes the impact of reserve provisions and changes to reserves that are considered appropriate, as well as the related net interest and penalties.

Significant judgment is also required in determining any valuation allowance recorded against deferred tax assets. In assessing the need for a valuation allowance, we consider all available evidence, including past operating results, estimates of future taxable income, and the feasibility of tax planning strategies. In the event that we change our determination as to the amount of deferred

tax assets that can be realized, we will adjust our valuation allowance with a corresponding impact to the provision for income taxes in the period in which such determination is made.

Our provision for income taxes is subject to volatility and could be adversely impacted by earnings being lower than anticipated in countries that have lower tax rates and higher than anticipated in countries that have higher tax rates; by changes in the valuation of our deferred tax assets and liabilities; by changes to domestic manufacturing deduction, foreign-derived intangible income deduction, global intangible low-tax income, and base erosion and anti-abuse tax laws, regulations, or interpretations thereof; by expiration of or lapses in tax incentives; by transfer pricing adjustments, including the effect of acquisitions on our legal structure; by tax effects of nondeductible compensation; by tax costs related to intercompany realignments; by changes in accounting principles; or by changes in tax laws and regulations, treaties, or interpretations thereof, including changes to the taxation of earnings of our foreign subsidiaries, the deductibility of expenses attributable to foreign income, and the foreign tax credit rules. Significant judgment is required to determine the recognition and measurement attributes prescribed in the accounting guidance for uncertainty in income taxes. The Organisation for Economic Co-operation and Development (OECD), an international association comprised of 36 countries, including the United States, has made changes to numerous long-standing tax principles. There can be no assurance that these changes, once adopted by countries, will not have an adverse impact on our provision for income taxes. As a result of certain of our ongoing employment and capital investment actions and commitments, our income in certain countries is subject to reduced tax rates. Our failure to meet these commitments could adversely impact our provision for income taxes. In addition, we are subject to the continuous examination of our income tax returns by the Internal Revenue Service (IRS) and other tax authorities. We regularly assess the likelihood of adverse outcomes resulting from these examinations to determine the adequacy of our provision for income taxes. There can be no assurance that the outcomes from these continuous examinations will not have an adverse impact on our operating results and financial condition.

RESULTS OF OPERATIONS

A discussion regarding our financial condition and results of operations for fiscal 2019 compared to fiscal 2018 is presented below. A discussion regarding our financial condition and results of operations for fiscal 2018 compared to fiscal 2017 can be found under Item 7 in our Annual Report on Form 10-K for the fiscal year ended July 28, 2018, filed with the SEC on September 6, 2018, which is available free of charge on the SEC's website at www.sec.gov and our Investor Relations website at investor.cisco.com.

Revenue

The following table presents the breakdown of revenue between product and service (in millions, except percentages):

	Years Ended			2019 vs. 2018	
	July 27, 2019 ⁽¹⁾	July 28, 2018	July 29, 2017	Variance in Dollars	Variance in Percent
Revenue:					
Product	\$ 39,005	\$ 36,709	\$ 35,705	\$ 2,296	6%
Percentage of revenue	75.1%	74.4%	74.4%		
Service	12,899	12,621	12,300	278	2%
Percentage of revenue	24.9%	25.6%	25.6%		
Total	\$ 51,904	\$ 49,330	\$ 48,005	\$ 2,574	5%

⁽¹⁾ Total revenue, product revenue and service revenue not including the SPVSS business in the prior year increased 7%, 8% and 3%, respectively.

We manage our business on a geographic basis, organized into three geographic segments. Our revenue, which includes product and service for each segment, is summarized in the following table (in millions, except percentages):

	Years Ended			2019 vs. 2018	
	July 27, 2019	July 28, 2018	July 29, 2017	Variance in Dollars	Variance in Percent
Revenue:					
Americas	\$ 30,927	\$ 29,070	\$ 28,351	\$ 1,857	6%
Percentage of revenue	59.6%	58.9%	59.1%		
EMEA	13,100	12,425	12,004	675	5%
Percentage of revenue	25.2%	25.2%	25.0%		
APJC	7,877	7,834	7,650	43	1%
Percentage of revenue	15.2%	15.9%	15.9%		
Total	\$ 51,904	\$ 49,330	\$ 48,005	\$ 2,574	5%

Amounts may not sum and percentages may not recalculate due to rounding.

Total revenue in fiscal 2019 increased by 5% compared with fiscal 2018. Product revenue increased by 6% and service revenue increased by 2%. Our total revenue reflected growth across each of our geographic segments. Product revenue for the BRICM countries, in the aggregate, experienced 1% product revenue decline, driven by a 16% decrease in product revenue in China and a decrease of 1% in Brazil. These decreases were partially offset by increased product revenue in Mexico, Russia and India of 26%, 6% and 5%, respectively.

In addition to the impact of macroeconomic factors, including a reduced IT spending environment and reductions in spending by government entities, revenue by segment in a particular period may be significantly impacted by several factors related to revenue recognition, including the complexity of transactions such as multiple performance obligations; the mix of financing arrangements provided to channel partners and customers; and final acceptance of the product, system, or solution, among other factors. In addition, certain customers tend to make large and sporadic purchases, and the revenue related to these transactions may also be affected by the timing of revenue recognition, which in turn would impact the revenue of the relevant segment.

Product Revenue by Segment

The following table presents the breakdown of product revenue by segment (in millions, except percentages):

	Years Ended			2019 vs. 2018	
	July 27, 2019	July 28, 2018	July 29, 2017	Variance in Dollars	Variance in Percent
Product revenue:					
Americas	\$ 22,754	\$ 21,088	\$ 20,487	\$ 1,666	8%
Percentage of product revenue	58.3%	57.5%	57.4%		
EMEA	10,246	9,671	9,369	575	6%
Percentage of product revenue	26.3%	26.3%	26.2%		
APJC	6,005	5,950	5,849	55	1%
Percentage of product revenue	15.4%	16.2%	16.4%		
Total	\$ 39,005	\$ 36,709	\$ 35,705	\$ 2,296	6%

Amounts may not sum and percentages may not recalculate due to rounding.

Americas

Product revenue in the Americas segment increased by 8%, driven by growth in the enterprise, public sector and commercial markets. These increases were partially offset by a product revenue decline in the service provider market. From a country perspective, product revenue increased by 9% in the United States, 26% in Mexico and 6% in Canada, partially offset by a product revenue decrease of 1% in Brazil.

EMEA

The increase in product revenue in the EMEA segment of 6% was driven by growth in the public sector and enterprise markets, partially offset by a decline in the service provider market. Product revenue in the commercial market was flat. Product revenue from emerging countries within EMEA increased by 9%, and product revenue for the remainder of the EMEA segment increased by 5%.

APJC

Product revenue in the APJC segment increased by 1%, driven by growth in the public sector and enterprise markets, partially offset by declines in the service provider and commercial markets. From a country perspective, product revenue increased by 9% in Japan and 5% in India, partially offset by a product revenue decrease of 16% in China.

Product Revenue by Groups of Similar Products

In addition to the primary view on a geographic basis, we also prepare financial information related to groups of similar products and customer markets for various purposes. We report our product revenue in the following categories: Infrastructure Platforms, Applications, Security, and Other Products. This aligns our product categories with our evolving business model. Prior period amounts have been reclassified to conform to the current period's presentation.

The following table presents revenue for groups of similar products (in millions, except percentages):

	Years Ended			2019 vs. 2018	
	July 27, 2019	July 28, 2018	July 29, 2017	Variance in Dollars	Variance in Percent
Product revenue:					
Infrastructure Platforms	\$ 30,191	\$ 28,322	\$ 27,817	\$ 1,869	7%
Applications	5,803	5,036	4,568	767	15%
Security	2,730	2,352	2,152	378	16%
Other Products	281	999	1,168	(718)	(72)%
Total	\$ 39,005	\$ 36,709	\$ 35,705	\$ 2,296	6%

Amounts may not sum and percentages may not recalculate due to rounding.

Infrastructure Platforms

The Infrastructure Platforms product category represents our core networking offerings related to switching, routing, wireless, and the data center. Infrastructure Platforms revenue increased by 7%, or \$1,869 million, with growth across the portfolio. Switching had solid growth, with strong revenue growth in campus switching driven by an increase in sales of our intent-based networking Catalyst 9000 Series, and with growth in data center switching driven by increased revenue from our ACI portfolio. Routing experienced modest revenue growth driven by an increase in sales of SD-WAN products, partially offset by weakness in the service provider market. We experienced double digit revenue growth from wireless products driven by increases across the portfolio. Revenue from data center increased driven by higher sales of HyperFlex and our server products.

Applications

The Applications product category includes our collaboration offerings (unified communications, Cisco TelePresence and conferencing) as well as IoT and AppDynamics analytics software offerings. Revenue in our Applications product category increased by 15%, or \$767 million, with double digit growth in unified communications, TelePresence, AppDynamics, and IoT software.

Security

Revenue in our Security product category increased 16%, or \$378 million, driven by higher sales of identity and access, advanced threat security, unified threat management and web security products. The Duo acquisition in the first quarter of fiscal 2019 also contributed to the revenue increase in this product category.

Other Products

The decrease in revenue from our Other Products category was primarily driven by a decrease in revenue from SPVSS business which we divested on October 28, 2018.

Service Revenue by Segment

The following table presents the breakdown of service revenue by segment (in millions, except percentages):

Years Ended	Years Ended			2019 vs. 2018	
	July 27, 2019	July 28, 2018	July 29, 2017	Variance in Dollars	Variance in Percent
Service revenue:					
Americas	\$ 8,173	\$ 7,982	\$ 7,864	\$ 191	2 %
<i>Percentage of service revenue</i>	<i>63.4%</i>	<i>63.3%</i>	<i>63.9%</i>		
EMEA	2,854	2,754	2,635	100	4 %
<i>Percentage of service revenue</i>	<i>22.1%</i>	<i>21.8%</i>	<i>21.4%</i>		
APJC	1,872	1,885	1,801	(13)	(1)%
<i>Percentage of service revenue</i>	<i>14.5%</i>	<i>14.9%</i>	<i>14.7%</i>		
Total	\$ 12,899	\$ 12,621	\$ 12,300	\$ 278	2 %

Amounts may not sum and percentages may not recalculate due to rounding.

Service revenue increased 2%, driven by an increase in software and solution support offerings. Service revenue increased in the Americas and EMEA segments, partially offset by decreased revenue in our APJC segment.

Gross Margin

The following table presents the gross margin for products and services (in millions, except percentages):

Years Ended	AMOUNT			PERCENTAGE		
	July 27, 2019	July 28, 2018	July 29, 2017	July 27, 2019	July 28, 2018	July 29, 2017
Gross margin:						
Product	\$ 24,142	\$ 22,282	\$ 22,006	61.9%	60.7%	61.6%
Service	8,524	8,324	8,218	66.1%	66.0%	66.8%
Total	\$ 32,666	\$ 30,606	\$ 30,224	62.9%	62.0%	63.0%

Product Gross Margin

The following table summarizes the key factors that contributed to the change in product gross margin percentage from fiscal 2018 to fiscal 2019:

	Product Gross Margin Percentage
Fiscal 2018	60.7 %
Productivity ⁽¹⁾	1.6 %
Product pricing	(0.7)%
Mix of products sold	(0.4)%
Impact from divestiture of SPVSS business	0.5 %
Legal and indemnification settlements	0.3 %
Others	(0.1)%
Fiscal 2019	61.9 %

⁽¹⁾ Productivity includes overall manufacturing-related costs, such as component costs, warranty expense, provision for inventory, freight, logistics, shipment volume, and other items not categorized elsewhere.

Product gross margin increased by 1.2 percentage points driven by productivity improvements, partially offset by unfavorable impacts from product pricing and product mix. Our product gross margin also benefited from the sale of our lower margin SPVSS business during the second quarter of fiscal 2019.

Productivity improvements were driven by cost reductions including value engineering efforts (e.g. component redesign, board configuration, test processes and transformation processes) and continued operational efficiency in manufacturing operations. The negative pricing impact, which was lower than the year-over-year impact we experienced in fiscal 2018, was driven by typical market factors and impacted each of our geographic segments and customer markets. The unfavorable product mix impact was driven by our products within the Infrastructure Platforms product category. Our product gross margin also benefited from the \$127 million charge to product cost of sales recorded in fiscal 2018 related to legal and indemnification settlements.

Service Gross Margin

Our service gross margin percentage increased by 0.1 percentage point due to higher sales volume, partially offset by increased headcount-related and delivery costs.

Our service gross margin normally experiences some fluctuations due to various factors such as the timing of contract initiations in our renewals, our strategic investments in headcount, and the resources we deploy to support the overall service business. Other factors include the mix of service offerings, as the gross margin from our advanced services is typically lower than the gross margin from technical support services.

Gross Margin by Segment

The following table presents the total gross margin for each segment (in millions, except percentages):

Years Ended	AMOUNT			PERCENTAGE		
	July 27, 2019	July 28, 2018	July 29, 2017	July 27, 2019	July 28, 2018	July 29, 2017
Gross margin:						
Americas	\$ 20,338	\$ 18,792	\$ 18,284	65.8%	64.6%	64.5%
EMEA	8,457	7,945	7,855	64.6%	63.9%	65.4%
APJC	4,683	4,726	4,741	59.5%	60.3%	62.0%
Segment total	33,479	31,463	30,880	64.5%	63.8%	64.3%
Unallocated corporate items ⁽¹⁾	(813)	(857)	(656)			
Total	\$ 32,666	\$ 30,606	\$ 30,224	62.9%	62.0%	63.0%

⁽¹⁾ The unallocated corporate items include the effects of amortization and impairments of acquisition-related intangible assets, share-based compensation expense, significant litigation settlements and other contingencies, charges related to asset impairments and restructurings, and certain other charges. We do not allocate these items to the gross margin for each segment because management does not include such information in measuring the performance of the operating segments.

Amounts may not sum and percentages may not recalculate due to rounding.

We experienced a gross margin percentage increase in our Americas segment due to productivity improvements, partially offset by unfavorable impacts from pricing and product mix. The unfavorable product mix impact was driven by products within the Infrastructure Platforms product category. Our gross margin in this segment also benefited from the sale of our lower margin SPVSS business during the second quarter of fiscal 2019.

Product gross margin in our EMEA segment increased due to productivity improvements, partially offset by negative impacts from pricing and mix.

The APJC segment gross margin percentage decrease was due to negative impacts from pricing, partially offset by productivity improvements and favorable product mix. Lower service gross margin also contributed to the decrease in the gross margin in this geographic segment.

The gross margin percentage for a particular segment may fluctuate, and period-to-period changes in such percentages may or may not be indicative of a trend for that segment.

Research and Development (“R&D”), Sales and Marketing, and General and Administrative (“G&A”) Expenses

R&D, sales and marketing, and G&A expenses are summarized in the following table (in millions, except percentages):

	Years Ended			2019 vs. 2018	
	July 27, 2019	July 28, 2018	July 29, 2017	Variance in Dollars	Variance in Percent
Research and development	\$ 6,577	\$ 6,332	\$ 6,059	\$ 245	4 %
<i>Percentage of revenue</i>	<i>12.7%</i>	<i>12.8%</i>	<i>12.6%</i>		
Sales and marketing	9,571	9,242	9,184	329	4 %
<i>Percentage of revenue</i>	<i>18.4%</i>	<i>18.7%</i>	<i>19.1%</i>		
General and administrative	1,827	2,144	1,993	(317)	(15)%
<i>Percentage of revenue</i>	<i>3.5%</i>	<i>4.3%</i>	<i>4.2%</i>		
Total	\$ 17,975	\$ 17,718	\$ 17,236	\$ 257	1 %
<i>Percentage of revenue</i>	<i>34.6%</i>	<i>35.9%</i>	<i>35.9%</i>		

R&D Expenses

R&D expenses increased due to higher headcount-related expenses and, to a lesser extent, higher acquisition-related costs, higher contracted services and higher discretionary spending.

We continue to invest in R&D in order to bring a broad range of products to market in a timely fashion. If we believe that we are unable to enter a particular market in a timely manner with internally developed products, we may purchase or license technology from other businesses, or we may partner with or acquire businesses as an alternative to internal R&D.

Sales and Marketing Expenses

Sales and marketing expenses increased due to higher headcount-related expenses, higher discretionary spending and, to a lesser extent, higher contracted services and higher acquisition-related costs, partially offset by lower share-based compensation expense.

G&A Expenses

G&A expenses decreased due to a benefit from the \$400 million litigation settlement with Arista Networks and lower contracted services, partially offset by higher discretionary spending and higher headcount-related expenses.

Effect of Foreign Currency

In fiscal 2019, foreign currency fluctuations, net of hedging, decreased the combined R&D, sales and marketing, and G&A expenses by approximately \$233 million, or 1.3%, compared with fiscal 2018. In fiscal 2018, foreign currency fluctuations, net of hedging, increased the combined R&D, sales and marketing, and G&A expenses by approximately \$93 million, or 0.5%, compared with fiscal 2017.

Amortization of Purchased Intangible Assets

The following table presents the amortization of purchased intangible assets (in millions):

<u>Years Ended</u>	<u>July 27, 2019</u>	<u>July 28, 2018</u>	<u>July 29, 2017</u>
Amortization of purchased intangible assets:			
Cost of sales	\$ 624	\$ 640	\$ 556
Operating expenses			
Amortization of purchased intangible assets	150	221	259
Restructuring and other charges	—	—	38
Total	\$ 774	\$ 861	\$ 853

The decrease in amortization of purchased intangible assets was due largely to the purchased intangible assets related to the divestiture of SPVSS business on October 28, 2018, partially offset by amortization from our recent acquisitions.

Restructuring and Other Charges

The following table presents the restructuring and other charges (in millions):

<u>Years Ended</u>	<u>July 27, 2019</u>	<u>July 28, 2018</u>	<u>July 29, 2017</u>
Restructuring and other charges included in operating expenses	\$ 322	\$ 358	\$ 756

We initiated a restructuring plan during fiscal 2018 in order to realign our organization and enable further investment in key priority areas, with estimated pretax charges of \$600 million. In connection with this restructuring plan, we incurred charges of \$322 million during fiscal 2019, and have incurred cumulative charges of \$430 million. We expect this restructuring plan to be substantially completed in the first half of fiscal 2020.

These charges were primarily cash-based and consisted of employee severance and other one-time termination benefits, and other associated costs. We expect to reinvest substantially all of the cost savings from these restructuring actions in our key priority areas. As a result, the overall cost savings from these restructuring actions are not expected to be material for future periods.

Operating Income

The following table presents our operating income and our operating income as a percentage of revenue (in millions, except percentages):

<u>Years Ended</u>	<u>July 27, 2019</u>	<u>July 28, 2018</u>	<u>July 29, 2017</u>
Operating income	\$ 14,219	\$ 12,309	\$ 11,973
Operating income as a percentage of revenue	27.4%	25.0%	24.9%

Operating income increased by 16%, and as a percentage of revenue operating income increased by 2.4 percentage points. These increases resulted primarily from: a revenue increase, a gross margin percentage increase, a benefit from the \$400 million litigation settlement with Arista in the first quarter of fiscal 2019, and lower restructuring and other charges.

Interest and Other Income (Loss), Net

Interest Income (Expense), Net The following table summarizes interest income and interest expense (in millions):

	Years Ended			2019 vs. 2018
	July 27, 2019	July 28, 2018	July 29, 2017	Variance in Dollars
Interest income	\$ 1,308	\$ 1,508	\$ 1,338	\$ (200)
Interest expense	(859)	(943)	(861)	84
Interest income (expense), net	\$ 449	\$ 565	\$ 477	\$ (116)

Interest income decreased, driven by a decrease in the average balance of cash and available-for-sale debt investments. The decrease in interest expense was driven by a lower average debt balance, partially offset by the impact of higher effective interest rates.

Other Income (Loss), Net The components of other income (loss), net, are summarized as follows (in millions):

	Years Ended			2019 vs. 2018
	July 27, 2019	July 28, 2018	July 29, 2017	Variance in Dollars
Gains (losses) on investments, net:				
Available-for-sale debt investments	\$ (13)	\$ (242)	\$ (42)	\$ 229
Marketable equity investments	(3)	529	(45)	(532)
Non-marketable equity and other investments	6	11	(46)	(5)
Net gains (losses) on investments	(10)	298	(133)	(308)
Other gains (losses), net	(87)	(133)	(30)	46
Other income (loss), net	\$ (97)	\$ 165	\$ (163)	\$ (262)

The total change in net gains (losses) on available-for-sale debt investments was primarily attributable to lower realized losses as a result of market conditions, and the timing of sales of these investments.

The total change in net gains (losses) on marketable equity investments was attributable to market value fluctuations and the timing of recognition of gains and losses.

The change in net gains (losses) on non-marketable equity and other investments was primarily due to lower realized gains, partially offset by higher unrealized gains.

The change in other gains (losses), net was primarily driven by higher donation expense in the prior year.

Provision for Income Taxes

The provision for income taxes resulted in an effective tax rate of 20.2% for fiscal 2019, compared with 99.2% for fiscal 2018. The net 79.0 percentage point decrease in the effective tax rate was primarily due to the \$10.4 billion mandatory one-time transition tax on accumulated earnings of foreign subsidiaries, foreign withholding tax, and DTA re-measurement recorded during fiscal 2018.

As a result of the adoption of the new accounting standard on share-based compensation in fiscal 2018, our effective tax rate will increase or decrease based upon the tax effect of the difference between the share-based compensation expenses and the benefits taken on the company's tax returns. We recognize excess tax benefits on a discrete basis and therefore anticipate the effective tax rate to vary from quarter to quarter depending on our share price in each period.

For a full reconciliation of our effective tax rate to the U.S. federal statutory rate of 21% and for further explanation of our provision for income taxes, see Note 17 to the Consolidated Financial Statements.

LIQUIDITY AND CAPITAL RESOURCES

The following sections discuss the effects of changes in our balance sheet, our capital allocation strategy including stock repurchase program and dividends, our contractual obligations, and certain other commitments and activities on our liquidity and capital resources.

Balance Sheet and Cash Flows

Cash and Cash Equivalents and Investments The following table summarizes our cash and cash equivalents and investments (in millions):

	July 27, 2019	July 28, 2018	Increase (Decrease)
Cash and cash equivalents	\$ 11,750	\$ 8,934	\$ 2,816
Available-for-sale debt investments	21,660	37,009	(15,349)
Marketable equity securities	3	605	(602)
Total	<u>\$ 33,413</u>	<u>\$ 46,548</u>	<u>\$ (13,135)</u>

The net decrease in cash and cash equivalents and investments from fiscal 2018 to fiscal 2019 was primarily driven by cash returned to shareholders in the form of repurchases of common stock of \$20.7 billion under the stock repurchase program and cash dividends of \$6.0 billion, net cash paid for acquisitions and divestitures of \$2.2 billion, a net decrease in debt of \$1.1 billion, and capital expenditures of \$0.9 billion. These uses of cash were partially offset by cash provided by operating activities of \$15.8 billion and the timing of settlements of investments and other of \$2.0 billion.

In addition to cash requirements in the normal course of business, on July 9, 2019 we announced our intent to acquire Acacia Communications, Inc. (“Acacia”) for a purchase consideration of approximately \$2.6 billion in cash. Additionally, \$0.7 billion of the U.S. transition tax on accumulated earnings for foreign subsidiaries, \$6.0 billion of long-term debt and \$4.2 billion of commercial paper notes outstanding at July 27, 2019, are payable within the next 12 months from the balance sheet date. See further discussion of liquidity and future payments under “Contractual Obligations” and “Liquidity and Capital Resource Requirements” below.

We maintain an investment portfolio of various holdings, types, and maturities. We classify our investments as short-term investments based on their nature and their availability for use in current operations. We believe the overall credit quality of our portfolio is strong, with our cash equivalents and our available-for-sale debt investment portfolio consisting primarily of high quality investment-grade securities. We believe that our strong cash and cash equivalents and investments position allows us to use our cash resources for strategic investments to gain access to new technologies, for acquisitions, for customer financing activities, for working capital needs, and for the repurchase of shares of common stock and payment of dividends as discussed below.

Free Cash Flow and Capital Allocation As part of our capital allocation strategy, we intend to return a minimum of 50% of our free cash flow annually to our shareholders through cash dividends and repurchases of common stock.

We define free cash flow as net cash provided by operating activities less cash used to acquire property and equipment. The following table reconciles our net cash provided by operating activities to free cash flow (in millions):

Years Ended	July 27, 2019	July 28, 2018	July 29, 2017
Net cash provided by operating activities	\$ 15,831	\$ 13,666	\$ 13,876
Acquisition of property and equipment	(909)	(834)	(964)
Free cash flow	<u>\$ 14,922</u>	<u>\$ 12,832</u>	<u>\$ 12,912</u>

We expect that cash provided by operating activities may fluctuate in future periods as a result of a number of factors, including fluctuations in our operating results, the rate at which products are shipped during the quarter (which we refer to as shipment linearity), the timing and collection of accounts receivable and financing receivables, inventory and supply chain management, deferred revenue and the timing and amount of tax and other payments. For additional discussion, see “Part I, Item 1A. Risk Factors” in this report.

We consider free cash flow to be a liquidity measure that provides useful information to management and investors because of our intent to return a stated percentage of free cash flow to shareholders in the form of dividends and stock repurchases. We further regard free cash flow as a useful measure because it reflects cash that can be used to, among other things, invest in our business, make strategic acquisitions, repurchase common stock, and pay dividends on our common stock, after deducting capital investments. A limitation of the utility of free cash flow as a measure of financial performance and liquidity is that the free cash flow does not

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represent the total increase or decrease in our cash balance for the period. In addition, we have other required uses of cash, including repaying the principal of our outstanding indebtedness. Free cash flow is not a measure calculated in accordance with U.S. generally accepted accounting principles and should not be regarded in isolation or as an alternative for net cash provided by operating activities or any other measure calculated in accordance with such principles, and other companies may calculate free cash flow in a different manner than we do.

The following table summarizes the dividends paid and stock repurchases (in millions, except per-share amounts):

Years Ended	DIVIDENDS		STOCK REPURCHASE PROGRAM			TOTAL
	Per Share	Amount	Shares	Weighted-Average Price per Share	Amount	Amount
July 27, 2019	\$ 1.36	\$ 5,979	418	\$ 49.22	\$ 20,577	\$ 26,556
July 28, 2018	\$ 1.24	\$ 5,968	432	\$ 40.88	\$ 17,661	\$ 23,629
July 29, 2017	\$ 1.10	\$ 5,511	118	\$ 31.38	\$ 3,706	\$ 9,217

Any future dividends are subject to the approval of our Board of Directors.

On February 13, 2019, our Board of Directors authorized a \$15 billion increase to the stock repurchase program. The remaining authorized amount for stock repurchases under this program, including the additional authorization, is approximately \$13.5 billion, with no termination date.

Accounts Receivable, Net The following table summarizes our accounts receivable, net (in millions):

	July 27, 2019	July 28, 2018	Increase (Decrease)
Accounts receivable, net	\$ 5,491	\$ 5,554	\$ (63)

Our accounts receivable net, as of July 27, 2019 decreased by approximately 1% compared with the end of fiscal 2018.

Inventory Supply Chain The following table summarizes our inventories and purchase commitments with contract manufacturers and suppliers (in millions):

	July 27, 2019	July 28, 2018	Increase (Decrease)
Inventories	\$ 1,383	\$ 1,846	\$ (463)

Inventory as of July 27, 2019 decreased by 25% from our inventory balance at the end of fiscal 2018. The decrease in inventory was due primarily to lower deferred cost of sales related to the adoption of ASC 606 in the beginning of our first quarter of fiscal 2019.

We purchase components from a variety of suppliers and use several contract manufacturers to provide manufacturing services for our products. During the normal course of business, in order to manage manufacturing lead times and help ensure adequate component supply, we enter into agreements with contract manufacturers and suppliers that allow them to procure inventory based upon criteria as defined by us or that establish the parameters defining our requirements and our commitment to securing manufacturing capacity.

Our purchase commitments are for short-term product manufacturing requirements as well as for commitments to suppliers to secure manufacturing capacity. Certain of our purchase commitments with contract manufacturers and suppliers relate to arrangements to secure long-term pricing for certain product components for multi-year periods. A significant portion of our reported purchase commitments arising from these agreements are firm, noncancelable, and unconditional commitments. In certain instances, these agreements allow us the option to cancel, reschedule, and adjust our requirements based on our business needs prior to firm orders being placed. We believe our inventory and purchase commitments levels are in line with our current demand forecasts.

The following table summarizes our purchase commitments with contract manufacturers and suppliers as of the respective period ends (in millions):

<u>Commitments by Period</u>	<u>July 27, 2019</u>	<u>July 28, 2018</u>
Less than 1 year	\$ 4,239	\$ 5,407
1 to 3 years	728	710
3 to 5 years	—	360
Total	<u>\$ 4,967</u>	<u>\$ 6,477</u>

Purchase commitments with contract manufacturers and suppliers decreased by approximately 23% compared to the end of fiscal 2018. On a combined basis, inventories and purchase commitments with contract manufacturers and suppliers decreased by 24% compared with the end of fiscal 2018.

Inventory and supply chain management remain areas of focus as we balance the need to maintain supply chain flexibility to help ensure competitive lead times with the risk of inventory obsolescence because of rapidly changing technology and customer requirements. We believe the amount of our inventory and purchase commitments is appropriate for our revenue levels.

Financing Receivables and Guarantees The following table summarizes our financing receivables (in millions):

	<u>July 27, 2019</u>	<u>July 28, 2018</u>	<u>Increase (Decrease)</u>
Lease receivables, net	\$ 2,326	\$ 2,576	\$ (250)
Loan receivables, net	5,367	4,939	428
Financed service contracts, net	2,360	2,316	44
Total, net	<u>\$ 10,053</u>	<u>\$ 9,831</u>	<u>\$ 222</u>

Financing Receivables Our financing arrangements include leases, loans, and financed service contracts. Lease receivables include sales-type and direct-financing leases. Arrangements related to leases are generally collateralized by a security interest in the underlying assets. Our loan receivables include customer financing for purchases of our hardware, software and services and also may include additional funds for other costs associated with network installation and integration of our products and services. We also provide financing to certain qualified customers for long-term service contracts, which primarily relate to technical support services. The majority of the revenue from these financed service contracts is deferred and is recognized ratably over the period during which the services are performed. Financing receivables increased by 2%. We expect to continue to expand the use of our financing programs in the near term.

Financing Guarantees In the normal course of business, third parties may provide financing arrangements to our customers and channel partners under financing programs. The financing arrangements to customers provided by third parties are related to leases and loans and typically have terms of up to three years. In some cases, we provide guarantees to third parties for these lease and loan arrangements. The financing arrangements to channel partners consist of revolving short-term financing provided by third parties, generally with payment terms ranging from 60 to 90 days. In certain instances, these financing arrangements result in a transfer of our receivables to the third party. The receivables are derecognized upon transfer, as these transfers qualify as true sales, and we receive payments for the receivables from the third party based on our standard payment terms.

The volume of channel partner financing was \$29.6 billion, \$28.2 billion, and \$27.0 billion in fiscal 2019, 2018, and 2017, respectively. These financing arrangements facilitate the working capital requirements of the channel partners, and in some cases, we guarantee a portion of these arrangements. The balance of the channel partner financing subject to guarantees was \$1.4 billion and \$1.0 billion as of July 27, 2019 and July 28, 2018, respectively. We could be called upon to make payments under these guarantees in the event of nonpayment by the channel partners or end-user customers. Historically, our payments under these arrangements have been immaterial. Where we provide a guarantee, we defer the revenue associated with the channel partner and end-user financing arrangement in accordance with revenue recognition policies, or we record a liability for the fair value of the guarantees. In either case, the deferred revenue is recognized as revenue when the guarantee is removed. As of July 27, 2019, the total maximum potential future payments related to these guarantees was approximately \$218 million, of which approximately \$77 million was recorded as deferred revenue.

Borrowings

Senior Notes The following table summarizes the principal amount of our senior notes (in millions):

	Maturity Date	July 27, 2019	July 28, 2018
Senior notes:			
Floating-rate notes:			
Three-month LIBOR plus 0.50%	March 1, 2019	\$ —	\$ 500
Three-month LIBOR plus 0.34%	September 20, 2019	500	500
Fixed-rate notes:			
4.95%	February 15, 2019	—	2,000
1.60%	February 28, 2019	—	1,000
2.125%	March 1, 2019	—	1,750
1.40%	September 20, 2019	1,500	1,500
4.45%	January 15, 2020	2,500	2,500
2.45%	June 15, 2020	1,500	1,500
2.20%	February 28, 2021	2,500	2,500
2.90%	March 4, 2021	500	500
1.85%	September 20, 2021	2,000	2,000
3.00%	June 15, 2022	500	500
2.60%	February 28, 2023	500	500
2.20%	September 20, 2023	750	750
3.625%	March 4, 2024	1,000	1,000
3.50%	June 15, 2025	500	500
2.95%	February 28, 2026	750	750
2.50%	September 20, 2026	1,500	1,500
5.90%	February 15, 2039	2,000	2,000
5.50%	January 15, 2040	2,000	2,000
Total		\$ 20,500	\$ 25,750

Interest is payable semiannually on each class of the senior fixed-rate notes, each of which is redeemable by us at any time, subject to a make-whole premium. Interest is payable quarterly on the floating-rate notes. We were in compliance with all debt covenants as of July 27, 2019.

Commercial Paper We have a short-term debt financing program in which up to \$10.0 billion is available through the issuance of commercial paper notes. We use the proceeds from the issuance of commercial paper notes for general corporate purposes. We had \$4.2 billion in commercial paper notes outstanding as of July 27, 2019 and no commercial paper notes outstanding as of July 28, 2018.

Credit Facility On May 15, 2015, we entered into a credit agreement with certain institutional lenders that provides for a \$3.0 billion unsecured revolving credit facility that is scheduled to expire on May 15, 2020. Any advances under the credit agreement will accrue interest at rates that are equal to, based on certain conditions, either (i) the highest of (a) the Federal Funds rate plus 0.50%, (b) Bank of America's "prime rate" as announced from time to time, or (c) LIBOR, or a comparable or successor rate that is approved by the Administrative Agent ("Eurocurrency Rate"), for an interest period of one month plus 1.00%, or (ii) the Eurocurrency Rate, plus a margin that is based on our senior debt credit ratings as published by Standard & Poor's Financial Services, LLC and Moody's Investors Service, Inc., provided that in no event will the Eurocurrency Rate be less than zero. We may also, upon the agreement of either the then-existing lenders or additional lenders not currently parties to the agreement, increase the commitments under the credit facility by up to an additional \$2.0 billion and/or extend the expiration date of the credit facility up to May 15, 2022. This credit agreement requires that we comply with certain covenants, including that we maintain an interest coverage ratio as defined in the agreement. As of July 27, 2019, we were in compliance with the required interest coverage ratio and the other covenants, and we had not borrowed any funds under the credit facility.

Deferred Revenue The following table presents the breakdown of deferred revenue (in millions):

	July 27, 2019	July 28, 2018	Increase (Decrease)
Service	\$ 11,709	\$ 11,431	\$ 278
Product	6,758	8,254	(1,496)
Total	<u>\$ 18,467</u>	<u>\$ 19,685</u>	<u>\$ (1,218)</u>
Reported as:			
Current	\$ 10,668	\$ 11,490	\$ (822)
Noncurrent	7,799	8,195	(396)
Total	<u>\$ 18,467</u>	<u>\$ 19,685</u>	<u>\$ (1,218)</u>

Deferred revenue decreased primarily due to the adoption of ASC 606 in the beginning of our first quarter of fiscal 2019. Of the total deferred revenue decrease related to the adoption of ASC 606 of \$2.8 billion, \$2.6 billion relates to deferred product revenue and \$0.2 billion relates to deferred service revenue. Of the adjustment to deferred product revenue, \$1.3 billion related to our recurring software and subscription offers, \$0.6 billion related to two-tier distribution, and the remainder related to non-recurring software and other adjustments. The decrease related to the adoption of ASC 606 was partially offset by an increase in product deferred revenue during the fiscal year. The increase in deferred service revenue was driven by the impact of contract renewals, partially offset by amortization of deferred service revenue.

Contractual Obligations

The impact of contractual obligations on our liquidity and capital resources in future periods should be analyzed in conjunction with the factors that impact our cash flows from operations discussed previously. In addition, we plan for and measure our liquidity and capital resources through an annual budgeting process. The following table summarizes our contractual obligations at July 27, 2019 (in millions):

	PAYMENTS DUE BY PERIOD				
	Total	Less than 1 Year	1 to 3 Years	3 to 5 Years	More than 5 Years
<u>July 27, 2019</u>					
Operating leases	\$ 1,179	\$ 441	\$ 494	\$ 190	\$ 54
Purchase commitments with contract manufacturers and suppliers	4,967	4,239	728	—	—
Other purchase obligations	1,490	676	622	98	94
Senior notes	20,500	6,000	5,500	2,250	6,750
Transition tax payable	8,343	749	1,498	2,113	3,983
Other long-term liabilities	1,214	—	220	136	858
Total by period	<u>\$ 37,693</u>	<u>\$ 12,105</u>	<u>\$ 9,062</u>	<u>\$ 4,787</u>	<u>\$ 11,739</u>
Other long-term liabilities (uncertainty in the timing of future payments)	1,428				
Total	<u>\$ 39,121</u>				

Operating Leases For more information on our operating leases, see Note 13 to the Consolidated Financial Statements.

Purchase Commitments with Contract Manufacturers and Suppliers We purchase components from a variety of suppliers and use several contract manufacturers to provide manufacturing services for our products. Our purchase commitments are for short-term product manufacturing requirements as well as for commitments to suppliers to secure manufacturing capacity. Certain of our purchase commitments with contract manufacturers and suppliers relate to arrangements to secure long-term pricing for certain product components for multi-year periods. A significant portion of our reported estimated purchase commitments arising from these agreements are firm, noncancelable, and unconditional commitments. We record a liability for firm, noncancelable, and unconditional purchase commitments for quantities in excess of our future demand forecasts consistent with the valuation of our excess and obsolete inventory. See further discussion in "Inventory Supply Chain." As of July 27, 2019, the liability for these purchase commitments was \$129 million and is recorded in other current liabilities and is not included in the preceding table.

Other Purchase Obligations Other purchase obligations represent an estimate of all contractual obligations in the ordinary course of business, other than operating leases and commitments with contract manufacturers and suppliers, for which we have not received the goods or services. Purchase orders are not included in the preceding table as they typically represent our authorization to purchase rather than binding contractual purchase obligations.

Long-Term Debt The amount of long-term debt in the preceding table represents the principal amount of the respective debt instruments. See Note 11 to the Consolidated Financial Statements.

Transition Tax Payable Transition tax payable represents future cash tax payments associated with the one-time U.S. transition tax on accumulated earnings of foreign subsidiaries as a result of the Tax Act. See Note 17 to the Consolidated Financial Statements.

Other Long-Term Liabilities Other long-term liabilities primarily include noncurrent income taxes payable, accrued liabilities for deferred compensation, deferred tax liabilities, and certain other long-term liabilities. Due to the uncertainty in the timing of future payments, our noncurrent income taxes payable of approximately \$1.3 billion and deferred tax liabilities of \$95 million were presented as one aggregated amount in the total column on a separate line in the preceding table. Noncurrent income taxes payable include uncertain tax positions. See Note 17 to the Consolidated Financial Statements.

Other Commitments

In connection with our acquisitions, we have agreed to pay certain additional amounts contingent upon the achievement of certain agreed-upon technology, development, product, or other milestones or the continued employment with us of certain employees of the acquired entities. See Note 13 to the Consolidated Financial Statements.

We also have certain funding commitments primarily related to our non-marketable equity and other investments, some of which are based on the achievement of certain agreed-upon milestones, and some of which are required to be funded on demand. The funding commitments were \$326 million as of July 27, 2019, compared with \$223 million as of July 28, 2018.

Off-Balance Sheet Arrangements

We consider our investments in unconsolidated variable interest entities to be off-balance sheet arrangements. In the ordinary course of business, we have non-marketable equity and other investments and provide financing to certain customers. Certain of these investments are considered to be variable interest entities. We evaluate on an ongoing basis our non-marketable equity and other investments and customer financings, and we have determined that as of July 27, 2019 there were no material unconsolidated variable interest entities.

On an ongoing basis, we reassess our non-marketable equity and other investments and customer financings to determine if they are variable interest entities and if we would be regarded as the primary beneficiary pursuant to the applicable accounting guidance. As a result of this ongoing assessment, we may be required to make additional disclosures or consolidate these entities. Because we may not control these entities, we may not have the ability to influence these events.

We provide financing guarantees, which are generally for various third-party financing arrangements extended to our channel partners and end-user customers. We could be called upon to make payments under these guarantees in the event of nonpayment by the channel partners or end-user customers. See the previous discussion of these financing guarantees under “Financing Receivables and Guarantees.”

Liquidity and Capital Resource Requirements

Based on past performance and current expectations, we believe our cash and cash equivalents, investments, cash generated from operations, and ability to access capital markets and committed credit lines will satisfy, through at least the next 12 months, our liquidity requirements, both in total and domestically, including the following: working capital needs, capital expenditures, investment requirements, stock repurchases, cash dividends, contractual obligations, commitments, principal and interest payments on debt, pending acquisitions, future customer financings, and other liquidity requirements associated with our operations. There are no other transactions, arrangements, or relationships with unconsolidated entities or other persons that are reasonably likely to materially affect the liquidity and the availability of, as well as our requirements for, capital resources.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Our financial position is exposed to a variety of risks, including interest rate risk, equity price risk, and foreign currency exchange risk.

Interest Rate Risk

Available-for-Sale Debt Investments We maintain an investment portfolio of various holdings, types, and maturities. Our primary objective for holding available-for-sale debt investments is to achieve an appropriate investment return consistent with preserving principal and managing risk. At any time, a sharp rise in market interest rates could have a material adverse impact on the fair value of our available-for-sale debt investment portfolio. Conversely, declines in interest rates, including the impact from lower credit spreads, could have a material adverse impact on interest income for our investment portfolio. We may utilize derivative instruments designated as hedging instruments to achieve our investment objectives. We had no outstanding hedging instruments for our available-for-sale debt investments as of July 27, 2019. Our available-for-sale debt investments are held for purposes other than trading. Our available-for-sale debt investments are not leveraged as of July 27, 2019. We monitor our interest rate and credit risks, including our credit exposures to specific rating categories and to individual issuers. We believe the overall credit quality of our portfolio is strong.

The following tables present the hypothetical fair values of our available-for-sale debt investments, including the hedging effects when applicable, as a result of selected potential market decreases and increases in interest rates. The market changes reflect immediate hypothetical parallel shifts in the yield curve of plus or minus 50 basis points (BPS), plus 100 BPS, and plus 150 BPS. The hypothetical fair values as of July 27, 2019 and July 28, 2018 are as follows (in millions):

	VALUATION OF SECURITIES GIVEN AN INTEREST RATE DECREASE OF X BASIS POINTS			FAIR VALUE AS OF JULY 27, 2019	VALUATION OF SECURITIES GIVEN AN INTEREST RATE INCREASE OF X BASIS POINTS		
	(150 BPS)	(100 BPS)	(50 BPS)		50 BPS	100 BPS	150 BPS
Available-for-sale debt investments	\$22,017	\$21,898	\$21,779	\$21,660	\$21,541	\$21,421	\$21,302

	VALUATION OF SECURITIES GIVEN AN INTEREST RATE DECREASE OF X BASIS POINTS			FAIR VALUE AS OF JULY 28, 2018	VALUATION OF SECURITIES GIVEN AN INTEREST RATE INCREASE OF X BASIS POINTS		
	(150 BPS)	(100 BPS)	(50 BPS)		50 BPS	100 BPS	150 BPS
Available-for-sale debt investments	\$37,786	\$37,527	\$37,268	\$37,009	\$36,750	\$36,491	\$36,231

Financing Receivables As of July 27, 2019, our financing receivables had a carrying value of \$10.1 billion, compared with \$9.8 billion as of July 28, 2018. As of July 27, 2019, a hypothetical 50 BPS increase or decrease in market interest rates would change the fair value of our financing receivables by a decrease or increase of approximately \$0.1 billion, respectively.

Debt As of July 27, 2019, we had \$20.5 billion in principal amount of senior notes outstanding, which consisted of \$0.5 billion in floating-rate notes and \$20.0 billion in fixed-rate notes. The carrying amount of the senior notes was \$20.5 billion, and the related fair value based on market prices was \$22.1 billion. As of July 27, 2019, a hypothetical 50 BPS increase or decrease in market interest rates would change the fair value of the fixed-rate debt, excluding the \$4.5 billion of hedged debt, by a decrease or increase of approximately \$0.5 billion, respectively. However, this hypothetical change in interest rates would not impact the interest expense on the fixed-rate debt that is not hedged.

Equity Price Risk

Marketable Equity Investments The fair value of our marketable equity investments is subject to market price volatility. We may hold equity securities for strategic purposes or to diversify our overall investment portfolio. These equity securities are held for purposes other than trading. As of July 27, 2019, the total fair value of our investments in marketable equity securities was \$3 million.

Non-marketable Equity and Other Investments These investments are recorded in other assets in our Consolidated Balance Sheets. As of July 27, 2019, the total carrying amount of our non-marketable equity and other investments was \$1.2 billion, compared with \$1.1 billion at July 28, 2018. Some of these companies in which we invested are in the startup or development stages. These investments are inherently risky because the markets for the technologies or products these companies are developing are typically in the early stages and may never materialize. We could lose our entire investment in these companies. Our evaluation of non-marketable equity and other investments is based on the fundamentals of the businesses invested in, including, among other factors, the nature of their technologies and potential for financial return.

Foreign Currency Exchange Risk

Our foreign exchange forward contracts outstanding at fiscal year-end are summarized in U.S. dollar equivalents as follows (in millions):

	July 27, 2019		July 28, 2018	
	Notional Amount	Fair Value	Notional Amount	Fair Value
Forward contracts:				
Purchased	\$ 2,239	\$ 14	\$ 1,850	\$ (2)
Sold	\$ 1,441	\$ (14)	\$ 845	\$ 2

At July 27, 2019 and July 28, 2018, we had no option contracts outstanding.

We conduct business globally in numerous currencies. The direct effect of foreign currency fluctuations on revenue has not been material because our revenue is primarily denominated in U.S. dollars. However, if the U.S. dollar strengthens relative to other currencies, such strengthening could have an indirect effect on our revenue to the extent it raises the cost of our products to non-U.S. customers and thereby reduces demand. A weaker U.S. dollar could have the opposite effect. However, the precise indirect effect of currency fluctuations is difficult to measure or predict because our revenue is influenced by many factors in addition to the impact of such currency fluctuations.

Approximately 70% of our operating expenses are U.S.-dollar denominated. In fiscal 2019, foreign currency fluctuations, net of hedging, decreased our combined R&D, sales and marketing, and G&A expenses by approximately \$233 million, or 1.3%, as compared with fiscal 2018. In fiscal 2018, foreign currency fluctuations, net of hedging, increased our combined R&D, sales and marketing, and G&A expenses by approximately \$93 million, or 0.5%, as compared with fiscal 2017. To reduce variability in operating expenses and service cost of sales caused by non-U.S.-dollar denominated operating expenses and costs, we may hedge certain forecasted foreign currency transactions with currency options and forward contracts. These hedging programs are not designed to provide foreign currency protection over long time horizons. In designing a specific hedging approach, we consider several factors, including offsetting exposures, significance of exposures, costs associated with entering into a particular hedge instrument, and potential effectiveness of the hedge. The gains and losses on foreign exchange contracts mitigate the effect of currency movements on our operating expenses and service cost of sales.

We also enter into foreign exchange forward and option contracts to reduce the short-term effects of foreign currency fluctuations on receivables and payables that are denominated in currencies other than the functional currencies of the entities. The market risks associated with these foreign currency receivables, investments, and payables relate primarily to variances from our forecasted foreign currency transactions and balances. We do not enter into foreign exchange forward or option contracts for speculative purposes.

Item 8. Financial Statements and Supplementary Data

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Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of Cisco Systems, Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Cisco Systems, Inc. and its subsidiaries (the “Company”) as of July 27, 2019 and July 28, 2018, and the related consolidated statements of operations, comprehensive income (loss), cash flows and equity for each of the three years in the period ended July 27, 2019, including the related notes and schedule of valuation and qualifying accounts for each of the three years in the period ended July 27, 2019 appearing under Item 15(a)(2) (collectively referred to as the “consolidated financial statements”). We also have audited the Company's internal control over financial reporting as of July 27, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of July 27, 2019 and July 28, 2018, and the results of its operations and its cash flows for each of the three years in the period ended July 27, 2019 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of July 27, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Change in Accounting Principle

As discussed in Note 2 to the consolidated financial statements, the Company changed the manner in which it accounts for revenues from contracts with customers in 2019.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Critical Audit Matters

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that (i) relates to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Revenue recognition — identification of contractual terms in certain customer arrangements

As described in Note 2 to the consolidated financial statements, management assesses relevant contractual terms in its customer arrangements to determine the transaction price and recognizes revenue upon transfer of control of the promised goods or services in an amount that reflects the consideration the Company expects to receive in exchange for those products or services. Management applies judgment in determining the transaction price which is dependent on the contractual terms. In order to determine the transaction price, management may be required to estimate variable consideration when determining the amount and timing of revenue recognition.

The principal considerations for our determination that performing procedures relating to the identification of contractual terms in customer arrangements to determine the transaction price is a critical audit matter are there was significant judgment by management in identifying contractual terms due to the volume and customized nature of the Company's customer arrangements. This in turn led to significant effort in performing our audit procedures which were designed to evaluate whether the contractual terms used in the determination of the transaction price and the timing of revenue recognition were appropriately identified and determined by management and to evaluate the reasonableness of management's estimates.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the revenue recognition process, including those related to the identification of contractual terms in customer arrangements that impact the determination of the transaction price and revenue recognition. These procedures also included, among others: (i) testing the completeness and accuracy of management's identification of the contractual terms by examining customer arrangements on a test basis, and (ii) testing management's process for determining the appropriate amount and timing of revenue recognition based on the contractual terms identified in the customer arrangements.

/s/ PricewaterhouseCoopers LLP
San Jose, California
September 5, 2019

We have served as the Company's auditor since 1988.

Reports of Management

Statement of Management's Responsibility

Cisco's management has always assumed full accountability for maintaining compliance with our established financial accounting policies and for reporting our results with objectivity and the highest degree of integrity. It is critical for investors and other users of the Consolidated Financial Statements to have confidence that the financial information that we provide is timely, complete, relevant, and accurate. Management is responsible for the fair presentation of Cisco's Consolidated Financial Statements, prepared in accordance with accounting principles generally accepted in the United States of America, and has full responsibility for their integrity and accuracy.

Management, with oversight by Cisco's Board of Directors, has established and maintains a strong ethical climate so that our affairs are conducted to the highest standards of personal and corporate conduct. Management also has established an effective system of internal controls. Cisco's policies and practices reflect corporate governance initiatives that are compliant with the listing requirements of Nasdaq and the corporate governance requirements of the Sarbanes-Oxley Act of 2002.

We are committed to enhancing shareholder value and fully understand and embrace our fiduciary oversight responsibilities. We are dedicated to ensuring that our high standards of financial accounting and reporting, as well as our underlying system of internal controls, are maintained. Our culture demands integrity, and we have the highest confidence in our processes, our internal controls and our people, who are objective in their responsibilities and who operate under the highest level of ethical standards.

Management's Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting for Cisco. Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of the assets of the Company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles and that receipts and expenditures of the Company are being made only in accordance with authorizations of management and directors of the Company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the Company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions or that the degree of compliance with the policies or procedures may deteriorate.

Management (with the participation of the principal executive officer and principal financial officer) conducted an evaluation of the effectiveness of Cisco's internal control over financial reporting based on the framework in *Internal Control—Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this evaluation, management concluded that Cisco's internal control over financial reporting was effective as of July 27, 2019. PricewaterhouseCoopers LLP, an independent registered public accounting firm, has audited the effectiveness of Cisco's internal control over financial reporting and has issued a report on Cisco's internal control over financial reporting, which is included in their report on the preceding pages.

/S/ CHARLES H. ROBBINS

Charles H. Robbins

Chairman and Chief Executive Officer

September 5, 2019

/S/ KELLY A. KRAMER

Kelly A. Kramer

Executive Vice President and Chief Financial Officer

September 5, 2019

CISCO SYSTEMS, INC.
Consolidated Balance Sheets
(in millions, except par value)

	July 27, 2019	July 28, 2018
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 11,750	\$ 8,934
Investments	21,663	37,614
Accounts receivable, net of allowance for doubtful accounts of \$136 at July 27, 2019 and \$129 at July 28, 2018	5,491	5,554
Inventories	1,383	1,846
Financing receivables, net	5,095	4,949
Other current assets	2,373	2,940
Total current assets	47,755	61,837
Property and equipment, net	2,789	3,006
Financing receivables, net	4,958	4,882
Goodwill	33,529	31,706
Purchased intangible assets, net	2,201	2,552
Deferred tax assets	4,065	3,219
Other assets	2,496	1,582
TOTAL ASSETS	\$ 97,793	\$ 108,784
LIABILITIES AND EQUITY		
Current liabilities:		
Short-term debt	\$ 10,191	\$ 5,238
Accounts payable	2,059	1,904
Income taxes payable	1,149	1,004
Accrued compensation	3,221	2,986
Deferred revenue	10,668	11,490
Other current liabilities	4,424	4,413
Total current liabilities	31,712	27,035
Long-term debt	14,475	20,331
Income taxes payable	8,927	8,585
Deferred revenue	7,799	8,195
Other long-term liabilities	1,309	1,434
Total liabilities	64,222	65,580
Commitments and contingencies (Note 13)		
Equity:		
Cisco shareholders' equity:		
Preferred stock, no par value: 5 shares authorized; none issued and outstanding	—	—
Common stock and additional paid-in capital, \$0.001 par value: 20,000 shares authorized; 4,250 and 4,614 shares issued and outstanding at July 27, 2019 and July 28, 2018, respectively	40,266	42,820
(Accumulated deficit) Retained earnings	(5,903)	1,233
Accumulated other comprehensive income (loss)	(792)	(849)
Total Cisco shareholders' equity	33,571	43,204
Noncontrolling interests	—	—
Total equity	33,571	43,204
TOTAL LIABILITIES AND EQUITY	\$ 97,793	\$ 108,784

See Notes to Consolidated Financial Statements.

CISCO SYSTEMS, INC.
Consolidated Statements of Operations
(in millions, except per-share amounts)

Years Ended	July 27, 2019	July 28, 2018	July 29, 2017
REVENUE:			
Product	\$ 39,005	\$ 36,709	\$ 35,705
Service	12,899	12,621	12,300
Total revenue	<u>51,904</u>	<u>49,330</u>	<u>48,005</u>
COST OF SALES:			
Product	14,863	14,427	13,699
Service	4,375	4,297	4,082
Total cost of sales	<u>19,238</u>	<u>18,724</u>	<u>17,781</u>
GROSS MARGIN	32,666	30,606	30,224
OPERATING EXPENSES:			
Research and development	6,577	6,332	6,059
Sales and marketing	9,571	9,242	9,184
General and administrative	1,827	2,144	1,993
Amortization of purchased intangible assets	150	221	259
Restructuring and other charges	322	358	756
Total operating expenses	<u>18,447</u>	<u>18,297</u>	<u>18,251</u>
OPERATING INCOME	14,219	12,309	11,973
Interest income	1,308	1,508	1,338
Interest expense	(859)	(943)	(861)
Other income (loss), net	(97)	165	(163)
Interest and other income (loss), net	<u>352</u>	<u>730</u>	<u>314</u>
INCOME BEFORE PROVISION FOR INCOME TAXES	14,571	13,039	12,287
Provision for income taxes	2,950	12,929	2,678
NET INCOME	\$ 11,621	\$ 110	\$ 9,609
Net income per share:			
Basic	<u>\$ 2.63</u>	<u>\$ 0.02</u>	<u>\$ 1.92</u>
Diluted	<u>\$ 2.61</u>	<u>\$ 0.02</u>	<u>\$ 1.90</u>
Shares used in per-share calculation:			
Basic	<u>4,419</u>	<u>4,837</u>	<u>5,010</u>
Diluted	<u>4,453</u>	<u>4,881</u>	<u>5,049</u>

See Notes to Consolidated Financial Statements.

CISCO SYSTEMS, INC.
Consolidated Statements of Comprehensive Income (Loss)
(in millions)

Years Ended	July 27, 2019	July 28, 2018	July 29, 2017
Net income	\$ 11,621	\$ 110	\$ 9,609
Available-for-sale investments:			
Change in net unrealized gains and losses, net of tax benefit (expense) of \$(101), \$(11), and \$74 for fiscal 2019, 2018, and 2017, respectively	459	(554)	(89)
Net (gains) losses reclassified into earnings, net of tax expense (benefit) of \$6, \$104, and \$(37) for fiscal 2019, 2018, and 2017, respectively	19	(183)	50
	478	(737)	(39)
Cash flow hedging instruments:			
Change in unrealized gains and losses, net of tax benefit (expense) of \$0, \$(3), and \$(5) for fiscal 2019, 2018, and 2017, respectively	—	18	17
Net (gains) losses reclassified into earnings, net of tax (benefit) expense of \$0, \$7, and \$(5) for fiscal 2019, 2018, and 2017, respectively	(3)	(61)	74
	(3)	(43)	91
Net change in cumulative translation adjustment and actuarial gains and losses, net of tax benefit (expense) of \$15, \$(8), and \$(13) for fiscal 2019, 2018, and 2017, respectively	(250)	(160)	321
Other comprehensive income (loss)	225	(940)	373
Comprehensive income (loss)	11,846	(830)	9,982
Comprehensive (income) loss attributable to noncontrolling interests	—	—	(1)
Comprehensive income (loss) attributable to Cisco Systems, Inc.	\$ 11,846	\$ (830)	\$ 9,981

See Notes to Consolidated Financial Statements.

CISCO SYSTEMS, INC.
Consolidated Statements of Cash Flows
(in millions)

Years Ended	July 27, 2019	July 28, 2018	July 29, 2017
Cash flows from operating activities:			
Net income	\$ 11,621	\$ 110	\$ 9,609
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation, amortization, and other	1,897	2,192	2,286
Share-based compensation expense	1,570	1,576	1,526
Provision (benefit) for receivables	40	(134)	(8)
Deferred income taxes	(350)	900	(124)
Excess tax benefits from share-based compensation	—	—	(153)
(Gains) losses on divestitures, investments and other, net	(24)	(322)	154
Change in operating assets and liabilities, net of effects of acquisitions and divestitures:			
Accounts receivable	(84)	(269)	756
Inventories	131	(244)	(394)
Financing receivables	(249)	(219)	(1,038)
Other assets	(955)	66	15
Accounts payable	87	504	311
Income taxes, net	312	8,118	60
Accrued compensation	277	100	(110)
Deferred revenue	1,407	1,205	1,683
Other liabilities	151	83	(697)
Net cash provided by operating activities	15,831	13,666	13,876
Cash flows from investing activities:			
Purchases of investments	(2,416)	(14,285)	(42,702)
Proceeds from sales of investments	7,388	17,706	28,827
Proceeds from maturities of investments	12,928	15,769	12,143
Acquisitions and divestitures	(2,175)	(2,979)	(3,324)
Purchases of investments in privately held companies	(148)	(267)	(222)
Return of investments in privately held companies	159	168	203
Acquisition of property and equipment	(909)	(834)	(964)
Proceeds from sales of property and equipment	22	59	7
Other	(12)	(19)	(4)
Net cash provided by (used in) investing activities	14,837	15,318	(6,036)
Cash flows from financing activities:			
Issuances of common stock	640	623	708
Repurchases of common stock - repurchase program	(20,717)	(17,547)	(3,685)
Shares repurchased for tax withholdings on vesting of restricted stock units	(862)	(703)	(619)
Short-term borrowings, original maturities of 90 days or less, net	3,446	(2,502)	2,497
Issuances of debt	2,250	6,877	6,980
Repayments of debt	(6,780)	(12,375)	(4,151)
Excess tax benefits from share-based compensation	—	—	153
Dividends paid	(5,979)	(5,968)	(5,511)
Other	113	(169)	(178)
Net cash used in financing activities	(27,889)	(31,764)	(3,806)
Net increase (decrease) in cash, cash equivalents, and restricted cash	2,779	(2,780)	4,034
Cash, cash equivalents, and restricted cash, beginning of fiscal year	8,993	11,773	7,739
Cash, cash equivalents, and restricted cash, end of fiscal year	\$ 11,772	\$ 8,993	\$ 11,773
Supplemental cash flow information:			
Cash paid for interest	\$ 839	\$ 910	\$ 897
Cash paid for income taxes, net	\$ 2,986	\$ 3,911	\$ 2,742

See Notes to Consolidated Financial Statements.

CISCO SYSTEMS, INC.
Consolidated Statements of Equity
(in millions, except per-share amounts)

	Shares of Common Stock	Common Stock and Additional Paid-In Capital	Retained Earnings (Accumulated Deficit)	Accumulated Other Comprehensive Income (Loss)	Total Cisco Shareholders' Equity	Non-controlling Interests	Total Equity
BALANCE AT JULY 30, 2016	5,029	\$ 44,516	\$ 19,396	\$ (326)	\$ 63,586	\$ (1)	\$ 63,585
Net income			9,609		9,609		9,609
Other comprehensive income (loss)				372	372	1	373
Issuance of common stock	92	708			708		708
Repurchase of common stock	(118)	(1,050)	(2,656)		(3,706)		(3,706)
Shares repurchased for tax withholdings on vesting of restricted stock units	(20)	(619)			(619)		(619)
Cash dividends declared (\$1.10 per common share)			(5,511)		(5,511)		(5,511)
Tax effects from employee stock incentive plans		(10)			(10)		(10)
Share-based compensation		1,540			1,540		1,540
Purchase acquisitions and other		168			168		168
BALANCE AT JULY 29, 2017	4,983	\$ 45,253	\$ 20,838	\$ 46	\$ 66,137	\$ —	\$ 66,137
Net income			110		110		110
Other comprehensive income (loss)				(940)	(940)		(940)
Issuance of common stock	83	623			623		623
Repurchase of common stock	(432)	(3,950)	(13,711)		(17,661)		(17,661)
Shares repurchased for tax withholdings on vesting of restricted stock units	(20)	(703)			(703)		(703)
Cash dividends declared (\$1.24 per common share)			(5,968)		(5,968)		(5,968)
Effect of adoption of accounting standards			(36)	45	9		9
Share-based compensation		1,576			1,576		1,576
Purchase acquisitions and other		21			21		21
BALANCE AT JULY 28, 2018	4,614	\$ 42,820	\$ 1,233	\$ (849)	\$ 43,204	\$ —	\$ 43,204
Net income			11,621		11,621		11,621
Other comprehensive income (loss)				225	225		225
Issuance of common stock	71	640			640		640
Repurchase of common stock	(418)	(3,902)	(16,675)		(20,577)		(20,577)
Shares repurchased for tax withholdings on vesting of restricted stock units	(17)	(862)			(862)		(862)
Cash dividends declared (\$1.36 per common share)			(5,979)		(5,979)		(5,979)
Effect of adoption of accounting standards			3,897	(168)	3,729		3,729
Share-based compensation		1,570			1,570		1,570
BALANCE AT JULY 27, 2019	4,250	\$ 40,266	\$ (5,903)	\$ (792)	\$ 33,571	\$ —	\$ 33,571

See Notes to Consolidated Financial Statements.

CISCO SYSTEMS, INC.
Notes to Consolidated Financial Statements

1. Basis of Presentation

The fiscal year for Cisco Systems, Inc. (the “Company,” “Cisco,” “we,” “us,” or “our”) is the 52 or 53 weeks ending on the last Saturday in July. Fiscal 2019, fiscal 2018 and fiscal 2017 were each 52-week fiscal years. The Consolidated Financial Statements include the accounts of ours and those of our subsidiaries. All intercompany accounts and transactions have been eliminated. We conduct business globally and are managed on a geographic basis in the following three geographic segments: the Americas; Europe, Middle East, and Africa (EMEA); and Asia Pacific, Japan, and China (APJC).

Our consolidated financial statements include our accounts and entities consolidated under the variable interest and voting methods. The noncontrolling interests attributed to these investments, if any, are presented as a separate component from our equity in the equity section of the Consolidated Balance Sheets. The share of earnings attributable to the noncontrolling interests are not presented separately in the Consolidated Statements of Operations as these amounts are not material for any of the fiscal periods presented.

Certain reclassifications have been made to the amounts for prior years in order to conform to the current year’s presentation. We have evaluated subsequent events through the date that the financial statements were issued.

2. Summary of Significant Accounting Policies

(a) Cash and Cash Equivalents We consider all highly liquid investments purchased with an original or remaining maturity of three months or less at the date of purchase to be cash equivalents. Cash and cash equivalents are maintained with various financial institutions.

(b) Available-for-Sale Debt Investments We classify our investments in fixed income securities as available-for-sale debt investments. Our available-for-sale debt investments primarily consist of U.S. government, U.S. government agency, non-U.S. government and agency, corporate debt, and U.S. agency mortgage-backed securities. These available-for-sale debt investments are primarily held in the custody of a major financial institution. A specific identification method is used to determine the cost basis of available-for-sale debt investments sold. These investments are recorded in the Consolidated Balance Sheets at fair value. Unrealized gains and losses on these investments, to the extent the investments are unhedged, are included as a separate component of accumulated other comprehensive income (AOCI), net of tax. We classify our investments as current based on the nature of the investments and their availability for use in current operations.

(c) Equity Instruments Our equity investments are accounted for as follows:

- *Marketable equity securities* have readily determinable fair value (RDFV) that are measured and recorded at fair value through income.
- *Non-marketable equity securities* do not have RDFV and are measured using a measurement alternative recorded at cost less any impairment, plus or minus changes resulting from qualifying observable price changes. For certain of these securities, we have elected to apply the net asset value (NAV) practical expedient. The NAV is the estimated fair value of these investments.
- *Equity method investments* are securities we do not control, but are able to exert significant influence over the investee. These investments are measured at cost less any impairment, plus or minus our share of equity method investee income or loss.

(d) Impairments of Investments When the fair value of a debt security is less than its amortized cost, it is deemed impaired, and we will assess whether the impairment is other than temporary. An impairment is considered other than temporary if (i) we have the intent to sell the security, (ii) it is more likely than not that we will be required to sell the security before recovery of the entire amortized cost basis, or (iii) we do not expect to recover the entire amortized cost basis of the security. If impairment is considered other than temporary based on condition (i) or (ii) described earlier, the entire difference between the amortized cost and the fair value of the debt security is recognized in earnings. If an impairment is considered other than temporary based on condition (iii), the amount representing credit losses (defined as the difference between the present value of the cash flows expected to be collected and the amortized cost basis of the debt security) will be recognized in earnings, and the amount relating to all other factors will be recognized in other comprehensive income (OCI).

We hold non-marketable equity and other investments which are included in other assets in the Consolidated Balance Sheets. We monitor these investments for impairments and make reductions in carrying values if we determine that an impairment charge is required based primarily on the financial condition and near-term prospects of these companies.

(e) Inventories Inventories are stated at the lower of cost or market. Cost is computed using standard cost, which approximates actual cost, on a first-in, first-out basis. We provide inventory write-downs based on excess and obsolete inventories determined primarily by future demand forecasts. The write-down is measured as the difference between the cost of the inventory and market based upon assumptions about future demand and charged to the provision for inventory, which is a component of cost of sales. At the point of the loss recognition, a new, lower cost basis for that inventory is established, and subsequent changes in facts and circumstances do not result in the restoration or increase in that newly established cost basis. In addition, we record a liability for firm, noncancelable, and unconditional purchase commitments with contract manufacturers and suppliers for quantities in excess of our future demand forecasts consistent with our valuation of excess and obsolete inventory.

(f) Allowance for Doubtful Accounts The allowance for doubtful accounts is based on our assessment of the collectibility of customer accounts. We regularly review the allowance by considering factors such as historical experience, credit quality, age of the accounts receivable balances, economic conditions that may affect a customer's ability to pay, and expected default frequency rates. Trade receivables are written off at the point when they are considered uncollectible.

(g) Financing Receivables and Guarantees We provide financing arrangements, including leases, financed service contracts, and loans, for certain qualified end-user customers to build, maintain, and upgrade their networks. Lease receivables primarily represent sales-type and direct-financing leases. Leases have on average a four-year term and are usually collateralized by a security interest in the underlying assets. Loan receivables include customers financing purchases of our hardware, software and services and also may include additional funds for other costs associated with network installation and integration of our products and services. Loan receivables have terms of three years on average. Financed service contracts typically have terms of one to three years and primarily relate to technical support services.

We determine the adequacy of our allowance for credit loss by assessing the risks and losses inherent in our financing receivables by portfolio segment. The portfolio segment is based on the types of financing offered by us to our customers: lease receivables, loan receivables, and financed service contracts.

We assess the allowance for credit loss related to financing receivables on either an individual or a collective basis. We consider various factors in evaluating lease and loan receivables and the earned portion of financed service contracts for possible impairment on an individual basis. These factors include our historical experience, credit quality and age of the receivable balances, and economic conditions that may affect a customer's ability to pay. When the evaluation indicates that it is probable that all amounts due pursuant to the contractual terms of the financing agreement, including scheduled interest payments, are unable to be collected, the financing receivable is considered impaired. All such outstanding amounts, including any accrued interest, are assessed and reserved at the customer level. Our internal credit risk ratings are categorized as 1 through 10, with the lowest credit risk rating representing the highest quality financing receivables. Typically, we also consider financing receivables with a risk rating of 8 or higher to be impaired and will include them in the individual assessment for allowance. We evaluate the remainder of our financing receivables portfolio for impairment on a collective basis and record an allowance for credit loss at the portfolio segment level. When evaluating the financing receivables on a collective basis, we use historical default rates and expected default frequency rates published by major third-party credit-rating agencies as well as our own historical loss rate in the event of default, while also systematically giving effect to economic conditions, concentration of risk, and correlation.

Expected default frequency rates and historical default rates are published quarterly by major third-party credit-rating agencies, and the internal credit risk rating is derived by taking into consideration various customer-specific factors and macroeconomic conditions. These factors, which include the strength of the customer's business and financial performance, the quality of the customer's banking relationships, our specific historical experience with the customer, the performance and outlook of the customer's industry, the customer's legal and regulatory environment, the potential sovereign risk of the geographic locations in which the customer is operating, and independent third-party evaluations, are updated regularly or when facts and circumstances indicate that an update is deemed necessary.

Financing receivables are written off at the point when they are considered uncollectible, and all outstanding balances, including any previously earned but uncollected interest income, will be reversed and charged against the allowance for credit loss. We do not typically have any partially written-off financing receivables.

Outstanding financing receivables that are aged 31 days or more from the contractual payment date are considered past due. We do not accrue interest on financing receivables that are considered impaired or more than 120 days past due unless either the receivable has not been collected due to administrative reasons or the receivable is well secured and in the process of collection. Financing receivables may be placed on nonaccrual status earlier if, in management's opinion, a timely collection of the full principal and interest becomes uncertain. After a financing receivable has been categorized as nonaccrual, interest will be recognized when cash is received. A financing receivable may be returned to accrual status after all of the customer's delinquent balances of principal and interest have been settled, and the customer remains current for an appropriate period.

We facilitate arrangements for third-party financing extended to channel partners, consisting of revolving short-term financing, generally with payment terms ranging from 60 to 90 days. In certain instances, these financing arrangements result in a transfer of our receivables to the third party. The receivables are derecognized upon transfer, as these transfers qualify as true sales, and we receive a payment for the receivables from the third party based on our standard payment terms. These financing arrangements facilitate the working capital requirements of the channel partners, and, in some cases, we guarantee a portion of these arrangements. We also provide financing guarantees for third-party financing arrangements extended to end-user customers related to leases and loans, which typically have terms of up to three years. We could be called upon to make payments under these guarantees in the event of nonpayment by the channel partners or end-user customers. Deferred revenue relating to these financing arrangements is recorded in accordance with revenue recognition policies or for the fair value of the financing guarantees.

(h) Depreciation and Amortization Property and equipment are stated at cost, less accumulated depreciation or amortization, whenever applicable. Depreciation and amortization expenses for property and equipment were approximately \$1.0 billion, \$1.1 billion, and \$1.1 billion for fiscal 2019, 2018, and 2017, respectively. Depreciation and amortization are computed using the straight-line method, generally over the following periods:

Asset Category	Period
Buildings	25 years
Building improvements	10 years
Leasehold improvements	Shorter of remaining lease term or up to 10 years
Computer equipment and related software	30 to 36 months
Production, engineering, and other equipment	Up to 5 years
Operating lease assets	Based on lease term
Furniture and fixtures	5 years

(i) Business Combinations We allocate the fair value of the purchase consideration of our acquisitions to the tangible assets, liabilities, and intangible assets acquired, including in-process research and development (IPR&D), based on their estimated fair values. The excess of the fair value of purchase consideration over the fair values of these identifiable assets and liabilities is recorded as goodwill. IPR&D is initially capitalized at fair value as an intangible asset with an indefinite life and assessed for impairment thereafter. When an IPR&D project is completed, the IPR&D is reclassified as an amortizable purchased intangible asset and amortized over the asset's estimated useful life. Acquisition-related expenses and related restructuring costs are recognized separately from the business combination and are expensed as incurred.

(j) Goodwill and Purchased Intangible Assets Goodwill is tested for impairment on an annual basis in the fourth fiscal quarter and, when specific circumstances dictate, between annual tests. When impaired, the carrying value of goodwill is written down to fair value. Identifying a potential impairment consists of comparing the fair value of a reporting unit with its carrying amount, including goodwill. Purchased intangible assets with finite lives are carried at cost, less accumulated amortization. Amortization is computed over the estimated useful lives of the respective assets. See "Long-Lived Assets" for our policy regarding impairment testing of purchased intangible assets with finite lives. Purchased intangible assets with indefinite lives are assessed for potential impairment annually or when events or circumstances indicate that their carrying amounts might be impaired.

(k) Long-Lived Assets Long-lived assets that are held and used by us are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of such assets may not be recoverable. Determination of recoverability of long-lived assets is based on an estimate of the undiscounted future cash flows resulting from the use of the asset and its eventual disposition. Measurement of an impairment loss for long-lived assets that management expects to hold and use is based on the difference between the fair value of the asset and its carrying value. Long-lived assets to be disposed of are reported at the lower of carrying amount or fair value less costs to sell.

(l) Fair Value Fair value is defined as the price that would be received from selling an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. When determining the fair value measurements for assets and liabilities required or permitted to be either recorded or disclosed at fair value, we consider the principal or most advantageous market in which we would transact, and we also consider assumptions that market participants would use when pricing the asset or liability.

The accounting guidance for fair value measurement requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. The standard establishes a fair value hierarchy based on the level of independent, objective evidence surrounding the inputs used to measure fair value. A financial instrument's categorization within the fair value hierarchy is based upon the lowest level of input that is significant to the fair value measurement.

The fair value hierarchy is as follows:

Level 1 applies to assets or liabilities for which there are quoted prices in active markets for identical assets or liabilities.

Level 2 applies to assets or liabilities for which there are inputs other than quoted prices that are observable for the asset or liability such as quoted prices for similar assets or liabilities in active markets; quoted prices for identical assets or liabilities in markets with insufficient volume or infrequent transactions (less active markets); or model-derived valuations in which significant inputs are observable or can be derived principally from, or corroborated by, observable market data. We use inputs such as actual trade data, benchmark yields, broker/dealer quotes, and other similar data, which are obtained from quoted market prices, independent pricing vendors, or other sources, to determine the ultimate fair value of assets or liabilities.

Level 3 applies to assets or liabilities for which there are unobservable inputs to the valuation methodology that are significant to the measurement of the fair value of the assets or liabilities. The fair values are determined based on model-based techniques such as discounted cash flow models using inputs that we could not corroborate with market data.

(m) Derivative Instruments We recognize derivative instruments as either assets or liabilities and measure those instruments at fair value. The accounting for changes in the fair value of a derivative depends on the intended use of the derivative and the resulting designation. For a derivative instrument designated as a fair value hedge, the gain or loss is recognized in earnings in the period of change together with the offsetting loss or gain on the hedged item attributed to the risk being hedged. For a derivative instrument designated as a cash flow hedge, the effective portion of the derivative's gain or loss is initially reported as a component of AOCI and subsequently reclassified into earnings when the hedged exposure affects earnings. The ineffective portion of the gain or loss is reported in earnings immediately. For a derivative instrument designated as a net investment hedge of our foreign operations, the gain or loss is recorded in the cumulative translation adjustment within AOCI together with the offsetting loss or gain of the hedged exposure of the underlying foreign operations. Any ineffective portion of the net investment hedges is reported in earnings during the period of change. For derivative instruments that are not designated as accounting hedges, changes in fair value are recognized in earnings in the period of change. We record derivative instruments in the statements of cash flows to operating, investing, or financing activities consistent with the cash flows of the hedged item.

Hedge effectiveness for foreign exchange forward contracts used as cash flow hedges is assessed by comparing the change in the fair value of the hedge contract with the change in the fair value of the forecasted cash flows of the hedged item. Hedge effectiveness for equity forward contracts and foreign exchange net investment hedge forward contracts is assessed by comparing changes in fair value due to changes in spot rates for both the derivative and the hedged item. For foreign exchange option contracts, hedge effectiveness is assessed based on the hedging instrument's entire change in fair value. Hedge effectiveness for interest rate swaps is assessed by comparing the change in fair value of the swap with the change in the fair value of the hedged item due to changes in the benchmark interest rate.

(n) Foreign Currency Translation Assets and liabilities of non-U.S. subsidiaries that operate in a local currency environment, where that local currency is the functional currency, are translated to U.S. dollars at exchange rates in effect at the balance sheet date, with the resulting translation adjustments directly recorded to a separate component of AOCI. Income and expense accounts are translated at average exchange rates during the year. Remeasurement adjustments are recorded in other income (loss), net. The effect of foreign currency exchange rates on cash and cash equivalents was not material for any of the fiscal years presented.

(o) Concentrations of Risk Cash and cash equivalents are maintained with several financial institutions. Deposits held with banks may exceed the amount of insurance provided on such deposits. Generally, these deposits may be redeemed upon demand and are maintained with financial institutions with reputable credit and therefore bear minimal credit risk. We seek to mitigate our credit risks by spreading such risks across multiple counterparties and monitoring the risk profiles of these counterparties.

We perform ongoing credit evaluations of our customers and, with the exception of certain financing transactions, do not require collateral from our customers. We receive certain of our components from sole suppliers. Additionally, we rely on a limited number of contract manufacturers and suppliers to provide manufacturing services for our products. The inability of a contract manufacturer or supplier to fulfill our supply requirements could materially impact future operating results.

(p) Revenue Recognition We enter into contracts with customers that can include various combinations of products and services which are generally distinct and accounted for as separate performance obligations. As a result, our contracts may contain multiple performance obligations. We determine whether arrangements are distinct based on whether the customer can benefit from the product or service on its own or together with other resources that are readily available and whether our commitment to transfer the product or service to the customer is separately identifiable from other obligations in the contract. We classify our hardware, perpetual software licenses, and software-as-a-service (SaaS) as distinct performance obligations. Term software licenses represent multiple obligations, which include software licenses and software maintenance. In transactions where we deliver hardware or software, we are typically the principal and we record revenue and costs of goods sold on a gross basis. We refer to our term software licenses, security software licenses, SaaS, and associated service arrangements as subscription offers.

We recognize revenue upon transfer of control of promised goods or services in a contract with a customer in an amount that reflects the consideration we expect to receive in exchange for those products or services. Transfer of control occurs once the customer has the contractual right to use the product, generally upon shipment or once title and risk of loss has transferred to the customer. Transfer of control can also occur over time for software maintenance and services as the customer receives the benefit over the contract term. Our hardware and perpetual software licenses are distinct performance obligations where revenue is recognized upfront upon transfer of control. Term software licenses include multiple performance obligations where the term licenses are recognized upfront upon transfer of control, with the associated software maintenance revenue recognized ratably over the contract term as services and software updates are provided. SaaS arrangements do not include the right for the customer to take possession of the software during the term, and therefore have one distinct performance obligation which is satisfied over time with revenue recognized ratably over the contract term as the customer consumes the services. On our product sales, we record consideration from shipping and handling on a gross basis within net product sales. We record our revenue net of any associated sales taxes.

Significant Judgments

Revenue is allocated among these performance obligations in a manner that reflects the consideration that we expect to be entitled to for the promised goods or services based on standalone selling prices (SSP). SSP is estimated for each distinct performance obligation and judgment may be required in their determination. The best evidence of SSP is the observable price of a product or service when we sell the goods separately in similar circumstances and to similar customers. In instances where SSP is not directly observable, we determine SSP using information that may include market conditions and other observable inputs.

We apply judgment in determining the transaction price as we may be required to estimate variable consideration when determining the amount of revenue to recognize. Variable consideration includes various rebate, cooperative marketing, potential penalties and other incentive programs that we offer to our distributors, partners and customers. When determining the amount of revenue to recognize, we estimate the expected usage of these programs, applying the expected value or most likely estimate and update the estimate at each reporting period as actual utilization becomes available. We also consider the customers' right of return in determining the transaction price, where applicable.

We assess certain software licenses, such as for security software, that contain critical updates or upgrades which customers can download throughout the contract term. Without these updates or upgrades, the functionality of the software would diminish over a relatively short time period. These updates or upgrades provide the customer the full functionality of the purchased security software licenses and are required to maintain the security license's utility as the risks and threats in the environment are rapidly changing. In these circumstances, the revenue from these software arrangements is recognized as a single performance obligation satisfied over the contract term.

For the additional disclosures required as part of ASC 606 see Note 3.

(q) Advertising Costs We expense all advertising costs as incurred. Advertising costs included within sales and marketing expenses were approximately \$204 million, \$166 million, and \$209 million for fiscal 2019, 2018, and 2017, respectively.

(r) Share-Based Compensation Expense We measure and recognize the compensation expense for all share-based awards made to employees and directors, including employee stock options, restricted stock units (RSUs), performance-based restricted stock units (PRSUs), and employee stock purchases related to the Employee Stock Purchase Plan (Employee Stock Purchase Rights) based on estimated fair values. The fair value of employee stock options is estimated on the date of grant using a lattice-binomial option-pricing model (Lattice-Binomial Model) or the Black-Scholes model, and for employee stock purchase rights we estimate the fair value using the Black-Scholes model. The fair value for time-based stock awards and stock awards that are contingent upon the achievement of financial performance metrics is based on the grant date share price reduced by the present value of the expected dividend yield prior to vesting. The fair value of market-based stock awards is estimated using an option-pricing model on the date of grant. Share-based compensation expense is reduced for forfeitures.

(s) Software Development Costs Software development costs, including costs to develop software sold, leased, or otherwise marketed, that are incurred subsequent to the establishment of technological feasibility are capitalized if significant. Costs incurred during the application development stage for internal-use software are capitalized if significant. Capitalized software development costs are amortized using the straight-line amortization method over the estimated useful life of the applicable software. Such software development costs required to be capitalized have not been material to date.

(t) Income Taxes Income tax expense is based on pretax financial accounting income. Deferred tax assets and liabilities are recognized for the expected tax consequences of temporary differences between the tax bases of assets and liabilities and their reported amounts. Valuation allowances are recorded to reduce deferred tax assets to the amount that will more likely than not be realized.

We account for uncertainty in income taxes using a two-step approach to recognizing and measuring uncertain tax positions. The first step is to evaluate the tax position for recognition by determining if the weight of available evidence indicates that it is more

likely than not that the position will be sustained on audit, including resolution of related appeals or litigation processes, if any. The second step is to measure the tax benefit as the largest amount that is more than 50% likely of being realized upon settlement. We classify the liability for unrecognized tax benefits as current to the extent that we anticipate payment (or receipt) of cash within one year. Interest and penalties related to uncertain tax positions are recognized in the provision for income taxes.

(u) Computation of Net Income per Share Basic net income per share is computed using the weighted-average number of common shares outstanding during the period. Diluted net income per share is computed using the weighted-average number of common shares and dilutive potential common shares outstanding during the period. Diluted shares outstanding includes the dilutive effect of in-the-money options, unvested restricted stock, and restricted stock units. The dilutive effect of such equity awards is calculated based on the average share price for each fiscal period using the treasury stock method. Under the treasury stock method, the amount the employee must pay for exercising stock options and the amount of compensation cost for future service that we have not yet recognized are collectively assumed to be used to repurchase shares.

(v) Consolidation of Variable Interest Entities Our approach in assessing the consolidation requirement for variable interest entities focuses on identifying which enterprise has the power to direct the activities that most significantly impact the variable interest entity's economic performance and which enterprise has the obligation to absorb losses or the right to receive benefits from the variable interest entity. Should we conclude that we are the primary beneficiary of a variable interest entity, the assets, liabilities, and results of operations of the variable interest entity will be included in our Consolidated Financial Statements.

(w) Use of Estimates The preparation of financial statements and related disclosures in conformity with accounting principles generally accepted in the United States requires management to make estimates and judgments that affect the amounts reported in the Consolidated Financial Statements and accompanying notes. Estimates are used for the following, among others:

- Revenue recognition
- Allowances for accounts receivable, sales returns, and financing receivables
- Inventory valuation and liability for purchase commitments with contract manufacturers and suppliers
- Loss contingencies and product warranties
- Fair value measurements and other-than-temporary impairments
- Goodwill and purchased intangible asset impairments
- Income taxes

The actual results experienced by us may differ materially from management's estimates.

(x) New Accounting Updates Recently Adopted

Revenue Recognition In May 2014, the FASB issued Accounting Standards Codification (ASC) 606, a new accounting standard related to revenue recognition. ASC 606 supersedes nearly all U.S. GAAP on revenue recognition and eliminated industry-specific guidance. The underlying principle of ASC 606 is to recognize revenue when a customer obtains control of promised goods or services at an amount that reflects the consideration that is expected to be received in exchange for those goods or services. We adopted ASC 606 using the modified retrospective method to those contracts that were not completed as of July 28, 2018. Refer to Opening Balance Adjustments below for the impact of adoption on our Consolidated Financial Statements.

The table below details the timing of when revenue was typically recognized under the prior revenue standard compared to the timing of when revenue is typically recognized under ASC 606 for these major areas:

	Prior Revenue Standard	ASC 606
Software arrangements:		
Perpetual software licenses	Upfront	Upfront
Term software licenses	Ratable	Upfront
Security software licenses	Ratable	Ratable
Enterprise license agreements (software licenses)	Ratable	Upfront
Software support (maintenance)	Ratable	Ratable
Software-as-a-service	Ratable	Ratable
Two-tier distribution	Sell-Through	Sell-In

In addition to the above revenue recognition timing impacts, ASC 606 requires incremental contract acquisition costs (such as sales commissions) for customer contracts to be capitalized and amortized on a systematic basis that is consistent with the transfer to the customer of the goods or services to which the assets relates.

We have implemented new accounting policies, systems, processes, and internal controls necessary to support the requirements of ASC 606.

Financial Instruments In January 2016, the FASB issued an accounting standard update that changes the accounting for equity investments, financial liabilities under the fair value option, and the presentation and disclosure requirements for financial instruments. The most significant impact of this accounting standard update is that it requires the remeasurement of investments not accounted for under the equity method to be recorded at fair value through the Consolidated Statement of Operations at the end of each reporting period. The application of this accounting standard update increases the variability of other income (loss), net.

We adopted this accounting standard update beginning the first quarter of fiscal 2019. The standard was adopted using the modified retrospective method for our marketable equity securities and non-marketable equity securities measured using the NAV practical expedient. For our non-marketable equity securities measured using the measurement alternative, we applied the prospective method. Refer to Opening Balance Adjustments below for the impact of adoption on our Consolidated Balance Sheet.

Income Taxes on Intra-Entity Transfers of Assets In October 2016, the FASB issued an accounting standard update that requires recognition of the income tax consequences of intra-entity transfers of assets (other than inventory) at the transaction date. We adopted this accounting standard update beginning in the first quarter of fiscal 2019 on a modified retrospective basis. The ongoing impact of this standard will be facts and circumstances dependent on any transactions within its scope. Refer to Opening Balance Adjustments below for the impact of adoption on our Consolidated Balance Sheet.

Classification of Cash Flow Elements In August 2016, the FASB issued an accounting standard update related to the classification of certain cash receipts and cash payments on the statement of cash flows. We adopted this accounting standard update beginning in the first quarter of fiscal 2019 on a retrospective basis. The application of this accounting standard update did not have an impact on our Consolidated Statements of Cash Flows.

Restricted Cash in Statement of Cash Flows In November 2016, the FASB issued an accounting standard update that provides guidance on the classification and presentation of changes in restricted cash and cash equivalents in the statement of cash flows. We adopted this accounting standard update beginning in the first quarter of fiscal 2019 using a retrospective transition method to each period presented. The application of this accounting standard update did not have a material impact on our Consolidated Statements of Cash Flows. Prior period information has been retrospectively adjusted due to the adoption of ASU 2016-18, Statement of Cash Flows, Restricted Cash at the beginning of the first quarter of fiscal 2019.

Simplifying the Test for Goodwill Impairment In January 2017, the FASB issued an accounting standard update that removes Step 2 of the goodwill impairment test, which requires the assessment of fair value of individual assets and liabilities of a reporting unit to measure goodwill impairments. Goodwill impairment will now be the amount by which a reporting unit's carrying value exceeds its fair value. We early adopted this accounting standard update beginning in the first quarter of fiscal 2019 on a prospective basis. The application of this accounting standard update did not have any impact on our Consolidated Financial Statements.

Definition of a Business In January 2017, the FASB issued an accounting standard update that clarifies the definition of a business to help companies evaluate whether acquisition or disposal transactions should be accounted for as asset groups or as businesses. We adopted this accounting standard update beginning in the first quarter of fiscal 2019 on a prospective basis. The impact of this accounting standard update will be fact dependent, but we expect that some transactions that were previously accounted for as business combinations or disposal transactions will be accounted for as asset purchases or asset sales under the accounting standard update.

Opening Balance Adjustments

The following table summarizes the cumulative effect of the changes made to the Consolidated Balance Sheet for the adoption of ASC 606, ASU 2016-01, *Financial Instruments*, and ASU 2016-16, *Intra-Entity Transfers of Assets Other than Inventory* (in millions):

<u>Line Item in Consolidated Balance Sheet:</u>	Balance at July 28, 2018	New Revenue Recognition Standard	New Financial Instruments Standard	New Intra-Entity Transfers Standard	Adjusted Balance at July 29, 2018
ASSETS					
Accounts receivable, net	\$ 5,554	\$ (104) ⁽¹⁾	\$ —	\$ —	\$ 5,450
Inventories	\$ 1,846	\$ (302) ⁽²⁾	\$ —	\$ —	\$ 1,544
Other current assets (includes capitalized contract acquisition costs)	\$ 2,940	\$ 371 ^{(3),(4)}	\$ —	\$ (25) ⁽³⁾	\$ 3,286
Deferred tax assets	\$ 3,219	\$ (624) ⁽³⁾	\$ (15) ⁽³⁾	\$ 1,415 ⁽⁸⁾	\$ 3,995
Other assets (includes capitalized contract acquisition costs)	\$ 1,582	\$ 327 ⁽⁴⁾	\$ 136 ⁽⁷⁾	\$ (91) ⁽³⁾	\$ 1,954
TOTAL ASSETS	\$ 108,784	\$ (332)	\$ 121	\$ 1,299	\$ 109,872
LIABILITIES AND EQUITY					
Income taxes payable	\$ 1,004	\$ —	\$ —	\$ 11 ⁽³⁾	\$ 1,015
Deferred revenue — current	\$ 11,490	\$ (1,702) ⁽⁵⁾	\$ —	\$ —	\$ 9,788
Other current liabilities	\$ 4,413	\$ 33 ⁽⁶⁾	\$ —	\$ —	\$ 4,446
Deferred revenue — non-current	\$ 8,195	\$ (1,081) ⁽⁵⁾	\$ —	\$ —	\$ 7,114
Other long-term liabilities	\$ 1,434	\$ 85 ⁽³⁾	\$ 13 ⁽³⁾	\$ —	\$ 1,532
Retained earnings	\$ 1,233	\$ 2,333 ⁽¹⁰⁾	\$ 283 ⁽¹⁰⁾	\$ 1,281 ⁽¹⁰⁾	\$ 5,130
Accumulated other comprehensive income (loss)	\$ (849)	\$ —	\$ (175) ⁽⁹⁾	\$ 7 ⁽³⁾	\$ (1,017)
TOTAL LIABILITIES AND EQUITY	\$ 108,784	\$ (332)	\$ 121	\$ 1,299	\$ 109,872

⁽¹⁾ Primarily represents the decrease to accounts receivable related to the change in recognizing revenue on sales to two-tier distributors from a sell-through to a sell-in basis

⁽²⁾ Primarily represents the reduction of inventory for the change from recognizing revenue on sales to two-tier distributors from a sell-through to a sell-in basis

⁽³⁾ Includes the impacts to deferred tax assets, liabilities and other income tax balances

⁽⁴⁾ Primarily represents capitalized contract acquisition costs (e.g. commissions)

⁽⁵⁾ Primarily represents deferred revenue adjusted to retained earnings primarily due to the change in revenue recognition for certain software arrangements from ratable to upfront, recognizing revenue on sales to two-tier distributors from a sell-through to a sell-in basis. Of this total \$2.8 billion adjustment, \$2.6 billion related to product deferred revenue, of which \$1.3 billion relates to our recurring software and subscription offers, \$0.6 billion relates to two-tier distribution, and the remainder relates to non-recurring software and other adjustments.

⁽⁶⁾ Primarily represents the reclassification of accounts receivable contra balances to other current liabilities, adjustments to rebate liabilities for the change from recognizing revenue on sales to two-tier distributors from a sell-through to a sell-in basis, and reclassifications from other current liabilities for amounts that are not contract liabilities under ASC 606

⁽⁷⁾ Represents the adjustment due to the remeasurement of non-marketable equity investments at fair value

⁽⁸⁾ Primarily represents the change in net deferred tax assets related to unrecognized income tax effects of intra-entity asset transfers

⁽⁹⁾ Represents the reclassification of net unrealized gains from accumulated other comprehensive income (loss) to retained earnings

⁽¹⁰⁾ Retained earnings impact from the adjustments noted above

Impact of ASC 606 Adoption

The application of ASC 606 increased our total revenue by \$1.0 billion in fiscal 2019. The application of ASC 606 did not have a material impact to either our cost of sales or our operating expenses in fiscal 2019. We recognized a \$152 million benefit to our provision for income taxes relating to indirect effects from the adoption of ASC 606 in the first quarter of fiscal 2019. For additional information regarding ASC 606, see Note 3 to the Consolidated Financial Statements.

In connection with the adoption of ASC 606, we recorded a transition adjustment to increase retained earnings by \$2.3 billion. See above for the transition impact of ASC 606 by balance sheet line item. As of July 27, 2019, the balance sheet changes attributable to ASC 606 related to accounts receivable, inventories, and deferred revenue were not materially different than the impacts upon adoption. In connection with the adoption of ASC 606, we established contract assets for unbilled receivables. As of July 27, 2019, we had total contract assets of \$860 million, of which \$379 million was recorded in other current assets and \$481 million was recorded in other assets. As of July 27, 2019, we had total capitalized contract acquisition costs of \$750 million, of which \$416 million was recorded in other current assets and \$334 million was recorded in other assets. The adoption of ASC 606 did not have any impact on net cash provided by operating activities.

(y) Recent Accounting Standards or Updates Not Yet Effective as of Fiscal Year End

Leases In February 2016, the FASB issued ASC 842, *Leases*, a new standard requiring lessees to recognize operating and finance lease liabilities on the balance sheet, as well as corresponding right-of-use (ROU) assets. This standard also made some changes to lessor accounting and aligns key aspects of the lessor accounting model with the revenue recognition standard. In addition, disclosures are required to enable users of financial statements to assess the amount, timing, and uncertainty of cash flows arising from leases. ASC 842 requires adoption using the modified retrospective approach, with the option of applying the requirements of the standard either i) retrospectively to each prior comparative reporting period presented, or ii) retrospectively at the beginning of the period of adoption.

We will adopt ASC 842 at the beginning of our first quarter of fiscal 2020 on a modified retrospective basis and will not restate prior comparative periods. Upon adopting ASC 842 at the beginning of fiscal 2020, as a lessee, we expect to recognize ROU lease assets and liabilities of approximately \$1 billion on our Consolidated Balance Sheets. For lessor accounting, we do not expect that this new standard will have a material impact on our Consolidated Financial Statements.

We do not expect that this new standard will have a material impact on our Consolidated Statement of Operations.

Credit Losses of Financial Instruments In June 2016, the FASB issued an accounting standard update that requires measurement and recognition of expected credit losses for financial assets held based on historical experience, current conditions, and reasonable and supportable forecasts that affect the collectibility of the reported amount. The accounting standard update will be effective for us beginning in the first quarter of fiscal 2021 on a modified retrospective basis, and early adoption in fiscal 2020 is permitted. We are currently evaluating the impact of this accounting standard update on our Consolidated Financial Statements.

3. Revenue

(a) Disaggregation of Revenue

We disaggregate our revenue into groups of similar products and services that depict the nature, amount, and timing of revenue and cash flows for our various offerings. The sales cycle, contractual obligations, customer requirements, and go-to-market strategies differ for each of our product categories, resulting in different economic risk profiles for each category.

The following table presents this disaggregation of revenue (in millions):

Years Ended	July 27, 2019	July 28, 2018	July 29, 2017
Revenue:			
Infrastructure Platforms	\$ 30,191	\$ 28,322	\$ 27,817
Applications	5,803	5,036	4,568
Security	2,730	2,352	2,152
Other Products	281	999	1,168
Total Product	39,005	36,709	35,705
Services	12,899	12,621	12,300
Total ⁽¹⁾	\$ 51,904	\$ 49,330	\$ 48,005

Amounts may not sum due to rounding.

⁽¹⁾ During the second quarter of fiscal 2019, we completed the divestiture of the Service Provider Video Software Solutions (SPVSS) business. Total revenue includes SPVSS business revenue of \$168 million and \$903 million for fiscal 2019 and 2018, respectively.

Infrastructure Platforms consist of our core networking technologies of switching, routing, wireless, and data center products that are designed to work together to deliver networking capabilities and transport and/or store data. These technologies consist of both hardware and software offerings, including software licenses and software-as-a-service (SaaS), that help our customers build networks, automate, orchestrate, integrate, and digitize data. We are shifting and expanding more of our business to software and subscriptions across our core networking portfolio. Our hardware and perpetual software in this category are distinct performance obligations where revenue is recognized upfront upon transfer of control. Term software licenses are multiple performance obligations where the term license is recognized upfront upon transfer of control with the associated software maintenance revenue recognized ratably over the contract term. SaaS arrangements in this category have one distinct performance obligation which is satisfied over time with revenue recognized ratably over the contract term.

Applications consists of offerings that utilize the core networking and data center platforms to provide their functions. The products consist primarily of software offerings, including software licenses and SaaS, as well as hardware. Our perpetual software and hardware in this category are distinct performance obligations where revenue is recognized upfront upon transfer of control. Term software licenses are multiple performance obligations where the term license is recognized upfront upon transfer of control with the associated software maintenance revenue recognized ratably over the contract term. SaaS arrangements in this category have one distinct performance obligation which is satisfied over time with revenue recognized ratably over the contract term.

Security primarily includes our network security, cloud and email security, identity and access management, advanced threat protection, and unified threat management products. These products consist of both hardware and software offerings, including software licenses and SaaS. Updates and upgrades for the term software licenses are critical for our software to perform its intended commercial purpose because of the continuous need for our software to secure our customers' network environments against frequent threats. Therefore, security software licenses are generally represented by a single distinct performance obligation with revenue recognized ratably over the contract term. Our hardware and perpetual software in this category are distinct performance obligations where revenue is recognized upfront upon transfer of control. SaaS arrangements in this category have one distinct performance obligation which is satisfied over time with revenue recognized ratably over the contract term.

Other Products primarily include our Service Provider Video Software Solutions and cloud and system management products. On October 28, 2018, we completed the sale of the SPVSS. These products include both hardware and software licenses. Our offerings in this category are distinct performance obligations where revenue is recognized upfront upon transfer of control.

In addition to our product offerings, we provide a broad range of service and support options for our customers, including technical support services and advanced services. Technical support services represent the majority of these offerings which are distinct performance obligations that are satisfied over time with revenue recognized ratably over the contract term. Advanced services are distinct performance obligations that are satisfied over time with revenue recognized as services are delivered.

The sales arrangements as discussed above are typically made pursuant to customer purchase orders based on master purchase or partner agreements. Cash is received based on our standard payment terms which is typically 30 days. We provide financing arrangements to customers for all of our hardware, software and service offerings. Refer to Note 8 for additional information. For these arrangements, cash is typically received over time.

(b) Contract Balances

Accounts receivable, net was \$5.5 billion as of July 27, 2019 compared to \$5.6 billion as of July 28, 2018.

Contract assets consist of unbilled receivables and are recorded when revenue is recognized in advance of scheduled billings to our customers. These amounts are primarily related to software and service arrangements where transfer of control has occurred but we have not yet invoiced. As of July 27, 2019 and July 29, 2018, our contract assets for these unbilled receivables were \$860 million and \$122 million, respectively, and were included in other current assets and other assets.

Contract liabilities consist of deferred revenue. Deferred revenue was \$18.5 billion as of July 27, 2019 compared to \$19.7 billion as of July 28, 2018. In connection with the adoption of ASC 606, we recorded an adjustment to retained earnings to reduce deferred revenue by \$2.8 billion. We recognized approximately \$9.6 billion of revenue during fiscal 2019 that was included in the deferred revenue balance at July 29, 2018.

(c) Remaining Performance Obligations

Remaining Performance Obligations (RPO) are comprised of deferred revenue plus unbilled contract revenue. As of July 27, 2019, the aggregate amount of RPO was \$25.3 billion, comprised of \$18.5 billion of deferred revenue and \$6.8 billion of unbilled contract revenue. We expect approximately 56% of this amount to be recognized as revenue over the next year. Unbilled contract revenue represents non-cancelable contracts for which we have not invoiced, have an obligation to perform, and revenue has not yet been recognized in the financial statements.

(d) Capitalized Contract Acquisition Costs

In connection with the adoption of ASC 606, we began to capitalize direct and incremental costs incurred to acquire contracts, primarily sales commissions, for which the associated revenue is expected to be recognized in future periods. We incur these costs in connection with both initial contracts and renewals. These costs are initially deferred and typically amortized over the term of the customer contract which corresponds to the period of benefit. Deferred sales commissions were \$750 million as of July 27, 2019, and was included in other current assets and other assets. The amortization expense associated with these costs was \$471 million for fiscal 2019 and was included in sales and marketing expenses.

4. Acquisitions and Divestitures

(a) Acquisition Summary

We completed five acquisitions during fiscal 2019. A summary of the allocation of the total purchase consideration is presented as follows (in millions):

<u>Fiscal 2019</u>	<u>Purchase Consideration</u>	<u>Net Tangible Assets Acquired (Liabilities Assumed)</u>	<u>Purchased Intangible Assets</u>	<u>Goodwill</u>
Duo	\$ 2,025	\$ (57)	\$ 342	\$ 1,740
Luxtera	596	(19)	319	296
Others (three in total)	65	2	11	52
Total	<u>\$ 2,686</u>	<u>\$ (74)</u>	<u>\$ 672</u>	<u>\$ 2,088</u>

On September 28, 2018, we completed our acquisition of privately held Duo Security, Inc. (“Duo”), a leading provider of unified access security and multi-factor authentication delivered through the cloud. Revenue from the Duo acquisition has been included in our Security product category.

On February 6, 2019, we completed our acquisition of Luxtera, Inc. (“Luxtera”), a privately held semiconductor company. Revenue from the Luxtera acquisition has been included in our Infrastructure Platforms product category.

The total purchase consideration related to our acquisitions completed during fiscal 2019 consisted of cash consideration and vested share-based awards assumed. The total cash and cash equivalents acquired from these acquisitions was approximately \$100 million.

Fiscal 2018 Acquisitions

Allocation of the purchase consideration for acquisitions completed in fiscal 2018 is summarized as follows (in millions):

Fiscal 2018	Purchase Consideration	Net Tangible Assets Acquired (Liabilities Assumed)	Purchased Intangible Assets	Goodwill
Viptela	\$ 497	\$ (18)	\$ 180	\$ 335
Springpath	248	(11)	160	99
BroadSoft	2,179	353	430	1,396
Accompany	222	6	55	161
Others (four in total)	72	4	42	26
Total	\$ 3,218	\$ 334	\$ 867	\$ 2,017

On July 31, 2017, we completed our acquisition of privately held Viptela Inc. (“Viptela”), a provider of software-defined wide area networking products. Revenue from the Viptela acquisition has been included in our Infrastructure Platforms product category.

On September 22, 2017, we completed our acquisition of privately held Springpath, Inc. (“Springpath”), a hyperconvergence software company. Revenue from the Springpath acquisition has been included in our Infrastructure Platforms product category.

On February 1, 2018, we completed our acquisition of publicly held BroadSoft, Inc. (“BroadSoft”), a cloud calling and contact center solutions company. Revenue from the BroadSoft acquisition has been included in our Applications product category.

On May 10, 2018, we completed our acquisition of privately held Accompany, a provider of an AI-driven relationship intelligence platform. Results from the Accompany acquisition has been included in our Applications product category.

The total purchase consideration related to our acquisitions completed during fiscal 2018 consisted of cash consideration and vested share-based awards assumed. The total cash and cash equivalents acquired from these acquisitions was approximately \$187 million.

Fiscal 2017 Acquisitions

In fiscal 2017, we completed seven acquisitions for total purchase consideration of \$3.6 billion.

(b) Divestiture of Service Provider Video Software Solutions Business

On October 28, 2018, we completed the sale of the Service Provider Video Software Solutions business. This business had tangible assets of approximately \$160 million (primarily comprised of accounts receivables, inventories and various other current and long-term assets) and net intangible assets and goodwill (based on relative fair value) of \$340 million. In addition, the business had total liabilities of approximately \$200 million (primarily comprised of deferred revenue and various other current and long-term liabilities). We recognized an immaterial gain from this transaction in fiscal 2019.

We completed two divestitures during fiscal 2018. The financial statement impact of these divestitures was not material for fiscal 2018.

(c) Pending Acquisition of Acacia Communications

On July 9, 2019, we announced our intent to acquire Acacia Communications, Inc. (“Acacia”), a public fabless semiconductor company that develops, manufactures and sells high-speed coherent optical interconnect products that are designed to transform communications networks through improvements in performance, capacity and cost.

Under the terms of the agreement, we have agreed to pay total consideration of approximately \$2.6 billion, net of cash and marketable securities, to acquire Acacia. The acquisition is expected to close during the second half of fiscal 2020, subject to customary closing conditions and regulatory approvals. Upon close of the acquisition, revenue from Acacia will be included in our Infrastructure Platforms product category.

(d) Other Acquisition and Divestiture Information

Total transaction costs related to our acquisition and divestiture activities during fiscal 2019, 2018, and 2017 were \$21 million, \$41 million, and \$10 million, respectively. These transaction costs were expensed as incurred in G&A expenses in the Consolidated Statements of Operations.

The goodwill generated from our acquisitions completed during fiscal 2019 is primarily related to expected synergies. The goodwill is generally not deductible for income tax purposes.

The Consolidated Financial Statements include the operating results of each acquisition from the date of acquisition. Pro forma results of operations for the acquisitions completed during fiscal 2019, 2018, and 2017 have not been presented because the effects of the acquisitions, individually and in the aggregate, were not material to our financial results.

5. Goodwill and Purchased Intangible Assets

(a) Goodwill

The following tables present the goodwill allocated to our reportable segments as of July 27, 2019 and July 28, 2018, as well as the changes to goodwill during fiscal 2019 and 2018 (in millions):

	Balance at July 28, 2018	Acquisitions & Divestitures	Other	Balance at July 27, 2019
Americas	\$ 19,998	\$ 1,240	\$ (118)	\$ 21,120
EMEA	7,529	486	(38)	7,977
APJC	4,179	274	(21)	4,432
Total	\$ 31,706	\$ 2,000	\$ (177)	\$ 33,529

	Balance at July 29, 2017	Acquisitions	Other	Balance at July 28, 2018
Americas	\$ 18,691	\$ 1,355	\$ (48)	\$ 19,998
EMEA	7,057	491	(19)	7,529
APJC	4,018	171	(10)	4,179
Total	\$ 29,766	\$ 2,017	\$ (77)	\$ 31,706

“Other” in the tables above primarily consists of foreign currency translation as well as immaterial purchase accounting adjustments.

(b) Purchased Intangible Assets

The following tables present details of our intangible assets acquired through acquisitions completed during fiscal 2019 and 2018 (in millions, except years):

Fiscal 2019	FINITE LIVES						INDEFINITE LIVES		TOTAL
	TECHNOLOGY		CUSTOMER RELATIONSHIPS		OTHER		IPR&D		
	Weighted-Average Useful Life (in Years)	Amount	Weighted-Average Useful Life (in Years)	Amount	Weighted-Average Useful Life (in Years)	Amount	Amount		
Duo	5.0	\$ 153	5.0	\$ 94	2.5	\$ 18	\$ 77	\$ 342	
Luxtera	4.0	2	5.0	58	1.6	3	256	319	
Others (three in total)	4.4	11	—	—	—	—	—	11	
Total		\$ 166		\$ 152		\$ 21	\$ 333	\$ 672	

Fiscal 2018	FINITE LIVES						INDEFINITE LIVES		TOTAL
	TECHNOLOGY		CUSTOMER RELATIONSHIPS		OTHER		IPR&D		
	Weighted-Average Useful Life (in Years)	Amount	Weighted-Average Useful Life (in Years)	Amount	Weighted-Average Useful Life (in Years)	Amount	Amount		
Viptela	5.0	\$ 144	6.0	\$ 35	1.0	\$ 1	\$ —	\$ 180	
Springpath	4.0	157	—	—	—	—	3	160	
BroadSoft	4.0	255	6.0	169	2.0	6	—	430	
Accompany	4.0	55	—	—	—	—	—	55	
Others (four in total)	3.9	39	4.0	3	—	—	—	42	
Total		\$ 650		\$ 207		\$ 7	\$ 3	\$ 867	

The following tables present details of our purchased intangible assets (in millions):

<u>July 27, 2019</u>	<u>Gross</u>	<u>Accumulated Amortization</u>	<u>Net</u>
Purchased intangible assets with finite lives:			
Technology	\$ 3,270	\$ (1,933)	\$ 1,337
Customer relationships	840	(331)	509
Other	41	(22)	19
Total purchased intangible assets with finite lives	4,151	(2,286)	1,865
In-process research and development, with indefinite lives	336	—	336
Total	\$ 4,487	\$ (2,286)	\$ 2,201

<u>July 28, 2018</u>	<u>Gross</u>	<u>Accumulated Amortization</u>	<u>Net</u>
Purchased intangible assets with finite lives:			
Technology	\$ 3,711	\$ (1,888)	\$ 1,823
Customer relationships	1,538	(937)	601
Other	63	(38)	25
Total purchased intangible assets with finite lives	5,312	(2,863)	2,449
In-process research and development, with indefinite lives	103	—	103
Total	\$ 5,415	\$ (2,863)	\$ 2,552

Purchased intangible assets include intangible assets acquired through acquisitions as well as through direct purchases or licenses.

Impairment charges related to purchased intangible assets were approximately \$47 million for fiscal 2017. Impairment charges were as a result of declines in estimated fair value resulting from the reduction or elimination of expected future cash flows associated with certain of our technology and IPR&D intangible assets.

The following table presents the amortization of purchased intangible assets (in millions):

<u>Years Ended</u>	<u>July 27, 2019</u>	<u>July 28, 2018</u>	<u>July 29, 2017</u>
Amortization of purchased intangible assets:			
Cost of sales	\$ 624	\$ 640	\$ 556
Operating expenses			
Amortization of purchased intangible assets	150	221	259
Restructuring and other charges	—	—	38
Total	\$ 774	\$ 861	\$ 853

The estimated future amortization expense of purchased intangible assets with finite lives as of July 27, 2019 is as follows (in millions):

<u>Fiscal Year</u>	<u>Amount</u>
2020	\$ 761
2021	\$ 565
2022	\$ 307
2023	\$ 165
2024	\$ 67

6. Restructuring and Other Charges

We initiated a restructuring plan during fiscal 2018 (the “Fiscal 2018 Plan”) in order to realign our organization and enable further investment in key priority areas with estimated pretax charges of \$600 million. In connection with the Fiscal 2018 Plan, we incurred charges of \$322 million during fiscal 2019, and have incurred cumulative charges of \$430 million. These aggregate pretax charges are primarily cash-based and consist of employee severance and other one-time termination benefits, and other associated costs. We expect the Fiscal 2018 Plan to be substantially completed in the first half of fiscal 2020.

We announced a restructuring plan in August 2016 (the “Fiscal 2017 Plan”), in order to reinvest in our key priority areas. In connection with the Fiscal 2017 Plan, we incurred cumulative charges of \$1.0 billion, which were primarily cash-based and consisted of employee severance and other one-time termination benefits, and other associated costs. We completed the Fiscal 2017 Plan in fiscal 2018.

The following table summarizes the activities related to the restructuring and other charges, as discussed above (in millions):

	FISCAL 2017 AND PRIOR YEAR PLANS		FISCAL 2018 PLAN		Total
	Employee Severance	Other	Employee Severance	Other	
Liability as of July 30, 2016	\$ 21	\$ 24	\$ —	\$ —	\$ 45
Charges	625	131	—	—	756
Cash payments	(569)	(37)	—	—	(606)
Non-cash items	(3)	(75)	—	—	(78)
Liability as of July 29, 2017	74	43	—	—	117
Charges	227	23	92	16	358
Cash payments	(262)	(35)	(73)	(2)	(372)
Non-cash items	2	(18)	—	(14)	(30)
Liability as of July 28, 2018	41	13	19	—	73
Charges	—	(1)	252	71	322
Cash payments	(41)	(7)	(248)	(3)	(299)
Non-cash items	—	—	(1)	(62)	(63)
Liability as of July 27, 2019	\$ —	\$ 5	\$ 22	\$ 6	\$ 33

7. Balance Sheet Details

The following tables provide details of selected balance sheet items (in millions):

	July 27, 2019	July 28, 2018
Cash and cash equivalents	\$ 11,750	\$ 8,934
Restricted cash included in other current assets	21	32
Restricted cash included in other assets	1	27
Total cash, cash equivalents, and restricted cash	<u>\$ 11,772</u>	<u>\$ 8,993</u>
Inventories:		
Raw materials	\$ 374	\$ 423
Work in process	10	—
Finished goods:		
Deferred cost of sales and distributor inventory	109	443
Manufactured finished goods	643	689
Total finished goods	<u>752</u>	<u>1,132</u>
Service-related spares	225	258
Demonstration systems	22	33
Total	<u>\$ 1,383</u>	<u>\$ 1,846</u>
Property and equipment, net:		
Gross property and equipment:		
Land, buildings, and building and leasehold improvements	\$ 4,545	\$ 4,710
Computer equipment and related software	922	1,085
Production, engineering, and other equipment	5,711	5,734
Operating lease assets	485	356
Furniture and fixtures	376	358
Total gross property and equipment	<u>12,039</u>	<u>12,243</u>
Less: accumulated depreciation and amortization	<u>(9,250)</u>	<u>(9,237)</u>
Total	<u>\$ 2,789</u>	<u>\$ 3,006</u>
Deferred revenue:		
Service	\$ 11,709	\$ 11,431
Product	6,758	8,254
Total	<u>\$ 18,467</u>	<u>\$ 19,685</u>
Reported as:		
Current	\$ 10,668	\$ 11,490
Noncurrent	7,799	8,195
Total	<u>\$ 18,467</u>	<u>\$ 19,685</u>

8. Financing Receivables and Operating Leases

(a) Financing Receivables

Financing receivables primarily consist of lease receivables, loan receivables, and financed service contracts. Lease receivables represent sales-type and direct-financing leases resulting from the sale of Cisco's and complementary third-party products and are typically collateralized by a security interest in the underlying assets. Lease receivables consist of arrangements with terms of four years on average. Loan receivables represent financing arrangements related to the sale of our hardware, software, and services, which may include additional funding for other costs associated with network installation and integration of our products and services. Loan receivables have terms of three years on average. Financed service contracts include financing receivables related to technical support and advanced services. Revenue related to the technical support services is typically deferred and included in deferred service revenue and is recognized ratably over the period during which the related services are to be performed, which typically ranges from one to three years.

A summary of our financing receivables is presented as follows (in millions):

<u>July 27, 2019</u>	<u>Lease Receivables</u>	<u>Loan Receivables</u>	<u>Financed Service Contracts</u>	<u>Total</u>
Gross	\$ 2,367	\$ 5,438	\$ 2,369	\$ 10,174
Residual value	142	—	—	142
Unearned income	(137)	—	—	(137)
Allowance for credit loss	(46)	(71)	(9)	(126)
Total, net	\$ 2,326	\$ 5,367	\$ 2,360	\$ 10,053
Reported as:				
Current	\$ 1,029	\$ 2,653	\$ 1,413	\$ 5,095
Noncurrent	1,297	2,714	947	4,958
Total, net	\$ 2,326	\$ 5,367	\$ 2,360	\$ 10,053
<u>July 28, 2018</u>	<u>Lease Receivables</u>	<u>Loan Receivables</u>	<u>Financed Service Contracts</u>	<u>Total</u>
Gross	\$ 2,688	\$ 4,999	\$ 2,326	\$ 10,013
Residual value	164	—	—	164
Unearned income	(141)	—	—	(141)
Allowance for credit loss	(135)	(60)	(10)	(205)
Total, net	\$ 2,576	\$ 4,939	\$ 2,316	\$ 9,831
Reported as:				
Current	\$ 1,249	\$ 2,376	\$ 1,324	\$ 4,949
Noncurrent	1,327	2,563	992	4,882
Total, net	\$ 2,576	\$ 4,939	\$ 2,316	\$ 9,831

Future minimum lease payments to Cisco on lease receivables as of July 27, 2019 are summarized as follows (in millions):

<u>Fiscal Year</u>	<u>Amount</u>
2020	\$ 1,028
2021	702
2022	399
2023	185
2024	53
Total	\$ 2,367

Actual cash collections may differ from the contractual maturities due to early customer buyouts, refinancings, or defaults.

(b) Credit Quality of Financing Receivables

Gross receivables, excluding residual value, less unearned income categorized by our internal credit risk rating as of July 27, 2019 and July 28, 2018 are summarized as follows (in millions):

	INTERNAL CREDIT RISK RATING			
	1 to 4	5 to 6	7 and Higher	Total
July 27, 2019				
Lease receivables	\$ 1,204	\$ 991	\$ 35	\$ 2,230
Loan receivables	3,367	1,920	151	5,438
Financed service contracts	1,413	939	17	2,369
Total	\$ 5,984	\$ 3,850	\$ 203	\$ 10,037
	INTERNAL CREDIT RISK RATING			
	1 to 4	5 to 6	7 and Higher	Total
July 28, 2018				
Lease receivables	\$ 1,294	\$ 1,199	\$ 54	\$ 2,547
Loan receivables	3,184	1,752	63	4,999
Financed service contracts	1,468	835	23	2,326
Total	\$ 5,946	\$ 3,786	\$ 140	\$ 9,872

We determine the adequacy of our allowance for credit loss by assessing the risks and losses inherent in our financing receivables by portfolio segment. The portfolio segment is based on the types of financing offered by us to our customers, which consist of the following: lease receivables, loan receivables, and financed service contracts.

Our internal credit risk ratings of 1 through 4 correspond to investment-grade ratings, while credit risk ratings of 5 and 6 correspond to non-investment grade ratings. Credit risk ratings of 7 and higher correspond to substandard ratings.

The following tables present the aging analysis of gross receivables, excluding residual value and less unearned income as of July 27, 2019 and July 28, 2018 (in millions):

	DAYS PAST DUE (INCLUDES BILLED AND UNBILLED)							Nonaccrual Financing Receivables	Impaired Financing Receivables
	31 - 60	61 - 90	91+	Total Past Due	Current	Total			
July 27, 2019									
Lease receivables	\$ 101	\$ 42	\$ 291	\$ 434	\$ 1,796	\$ 2,230	\$ 13	\$ 13	
Loan receivables	257	67	338	662	4,776	5,438	31	31	
Financed service contracts	145	131	271	547	1,822	2,369	3	3	
Total	\$ 503	\$ 240	\$ 900	\$ 1,643	\$ 8,394	\$ 10,037	\$ 47	\$ 47	

	DAYS PAST DUE (INCLUDES BILLED AND UNBILLED)							Nonaccrual Financing Receivables	Impaired Financing Receivables
	31 - 60	61 - 90	91+	Total Past Due	Current	Total			
July 28, 2018									
Lease receivables	\$ 72	\$ 27	\$ 155	\$ 254	\$ 2,293	\$ 2,547	\$ 9	\$ 9	
Loan receivables	104	55	252	411	4,588	4,999	30	30	
Financed service contracts	138	78	304	520	1,806	2,326	3	3	
Total	\$ 314	\$ 160	\$ 711	\$ 1,185	\$ 8,687	\$ 9,872	\$ 42	\$ 42	

Past due financing receivables are those that are 31 days or more past due according to their contractual payment terms. The data in the preceding tables is presented by contract, and the aging classification of each contract is based on the oldest outstanding receivable, and therefore past due amounts also include unbilled and current receivables within the same contract. The balances of either unbilled or current financing receivables included in the category of 91 days plus past due for financing receivables were \$244 million and \$503 million as of July 27, 2019 and July 28, 2018, respectively.

As of July 27, 2019, we had financing receivables of \$215 million, net of unbilled or current receivables, that were greater than 120 days plus past due but remained on accrual status as they are well secured and in the process of collection. Such balance was \$182 million as of July 28, 2018.

(c) Allowance for Credit Loss Rollforward

The allowances for credit loss and the related financing receivables are summarized as follows (in millions):

CREDIT LOSS ALLOWANCES				
	Lease Receivables	Loan Receivables	Financed Service Contracts	Total
Allowance for credit loss as of July 28, 2018	\$ 135	\$ 60	\$ 10	\$ 205
Provisions (benefits)	(54)	11	27	(16)
Recoveries (write-offs), net	(14)	—	(28)	(42)
Foreign exchange and other	(21)	—	—	(21)
Allowance for credit loss as of July 27, 2019	\$ 46	\$ 71	\$ 9	\$ 126

CREDIT LOSS ALLOWANCES				
	Lease Receivables	Loan Receivables	Financed Service Contracts	Total
Allowance for credit loss as of July 29, 2017	\$ 162	\$ 103	\$ 30	\$ 295
Provisions (benefits)	(26)	(43)	(20)	(89)
Recoveries (write-offs), net	(1)	(5)	—	(6)
Foreign exchange and other	—	5	—	5
Allowance for credit loss as of July 28, 2018	\$ 135	\$ 60	\$ 10	\$ 205

CREDIT LOSS ALLOWANCES				
	Lease Receivables	Loan Receivables	Financed Service Contracts	Total
Allowance for credit loss as of July 30, 2016	\$ 230	\$ 97	\$ 48	\$ 375
Provisions (benefits)	(25)	7	(17)	(35)
Recoveries (write-offs), net	(37)	(11)	(1)	(49)
Foreign exchange and other	(6)	10	—	4
Allowance for credit loss as of July 29, 2017	\$ 162	\$ 103	\$ 30	\$ 295

(d) Operating Leases

We provide financing of certain equipment through operating leases, and the amounts are included in property and equipment in the Consolidated Balance Sheets. Amounts relating to equipment on operating lease assets and the associated accumulated depreciation are summarized as follows (in millions):

	July 27, 2019	July 28, 2018
Operating lease assets	\$ 485	\$ 356
Accumulated depreciation	(306)	(238)
Operating lease assets, net	\$ 179	\$ 118

Minimum future rentals on noncancelable operating leases as of July 27, 2019 are summarized as follows (in millions):

Fiscal Year	Amount
2020	\$ 125
2021	64
2022	16
2023	1
Total	\$ 206

9. Available-for-Sale Debt Investments and Equity Investments

The following table summarizes our available-for-sale debt investments and equity investments (in millions):

	July 27, 2019	July 28, 2018
Available-for-sale debt investments	\$ 21,660	\$ 37,009
Marketable equity securities	3	605
Total investments	21,663	37,614
Non-marketable equity securities included in other assets ⁽¹⁾	1,113	978
Equity method investments included in other assets	87	118
Total	\$ 22,863	\$ 38,710

⁽¹⁾ We held equity interests in certain private equity funds of \$0.6 billion as of July 27, 2019 which are accounted for under the NAV practical expedient following the adoption of ASU 2016-01, *Financial Instruments*, starting in the first quarter of fiscal 2019.

(a) Summary of Available-for-Sale Debt Investments

The following tables summarize our available-for-sale debt investments (in millions):

July 27, 2019	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
U.S. government securities	\$ 808	\$ 1	\$ (1)	\$ 808
U.S. government agency securities	169	—	—	169
Corporate debt securities	19,188	103	(29)	19,262
U.S. agency mortgage-backed securities	1,425	7	(11)	1,421
Total	\$ 21,590	\$ 111	\$ (41)	\$ 21,660

July 28, 2018	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
U.S. government securities	\$ 7,318	\$ —	\$ (43)	\$ 7,275
U.S. government agency securities	732	—	(5)	727
Non-U.S. government and agency securities	209	—	(1)	208
Corporate debt securities	27,765	44	(445)	27,364
U.S. agency mortgage-backed securities	1,488	—	(53)	1,435
Total	\$ 37,512	\$ 44	\$ (547)	\$ 37,009

Net unsettled investment sales as of July 28, 2018 were \$1.5 billion and were included in other current assets.

Non-U.S. government and agency securities include agency and corporate debt securities that are guaranteed by non-U.S. governments.

The following table presents the gross realized gains and gross realized losses related to available-for-sale debt investments (in millions):

Years Ended	July 27, 2019	July 28, 2018	July 29, 2017
Gross realized gains	\$ 17	\$ 16	\$ 69
Gross realized losses	(30)	(258)	(111)
Total	\$ (13)	\$ (242)	\$ (42)

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The following tables present the breakdown of the available-for-sale debt investments with gross unrealized losses and the duration that those losses had been unrealized at July 27, 2019 and July 28, 2018 (in millions):

	UNREALIZED LOSSES LESS THAN 12 MONTHS		UNREALIZED LOSSES 12 MONTHS OR GREATER		TOTAL	
	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses
July 27, 2019						
U.S. government securities	\$ 204	\$ —	\$ 488	\$ (1)	\$ 692	\$ (1)
U.S. government agency securities	—	—	169	—	169	—
Corporate debt securities	2,362	(4)	5,271	(25)	7,633	(29)
U.S. agency mortgage-backed securities	123	—	847	(11)	970	(11)
Total	\$ 2,689	\$ (4)	\$ 6,775	\$ (37)	\$ 9,464	\$ (41)

	UNREALIZED LOSSES LESS THAN 12 MONTHS		UNREALIZED LOSSES 12 MONTHS OR GREATER		TOTAL	
	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses
July 28, 2018						
U.S. government securities	\$ 2,966	\$ (20)	\$ 4,303	\$ (23)	\$ 7,269	\$ (43)
U.S. government agency securities	206	(2)	521	(3)	727	(5)
Non-U.S. government and agency securities	105	(1)	103	—	208	(1)
Corporate debt securities	16,990	(344)	3,511	(101)	20,501	(445)
U.S. agency mortgage-backed securities	826	(24)	581	(29)	1,407	(53)
Total	\$ 21,093	\$ (391)	\$ 9,019	\$ (156)	\$ 30,112	\$ (547)

As of July 27, 2019, for available-for-sale debt investments that were in an unrealized loss position, we have determined that no other-than-temporary impairments were required to be recognized.

The following table summarizes the maturities of our available-for-sale debt investments as of July 27, 2019 (in millions):

	Amortized Cost	Fair Value
Within 1 year	\$ 6,322	\$ 6,324
After 1 year through 5 years	12,191	12,218
After 5 years through 10 years	1,643	1,687
After 10 years	9	10
Mortgage-backed securities with no single maturity	1,425	1,421
Total	\$ 21,590	\$ 21,660

Actual maturities may differ from the contractual maturities because borrowers may have the right to call or prepay certain obligations.

(b) Summary of Equity Investments

We recorded adjustments to the carrying value of our non-marketable equity securities measured using the measurement alternative during fiscal 2019 as follows (in millions):

	July 27, 2019
Adjustments to non-marketable equity securities measured using the measurement alternative:	
Upward adjustments	\$ 35
Downward adjustments, including impairments	(57)
Net adjustments	\$ (22)

Gains and losses recognized on our marketable and non-marketable equity securities for fiscal 2019 are as follows (in millions):

	July 27, 2019	
Net gains and losses recognized during the period on equity investments	\$	58
Less: Net gains and losses recognized on equity investments sold		(69)
Net unrealized gains and losses recognized during reporting period on equity securities still held at the reporting date	\$	(11)

Prior to the adoption of ASU 2016-01, *Financial Instruments*, we recognized impairment charges on our publicly traded equity securities of \$52 million and \$74 million in fiscal 2018 and 2017, respectively. These impairment charges were due to a decline in the fair value of those securities below their cost basis that were determined to be other than temporary.

(c) Securities Lending

We periodically engage in securities lending activities with certain of our available-for-sale investments. These transactions are accounted for as a secured lending of the securities, and the securities are typically loaned only on an overnight basis. The average daily balance of securities lending for fiscal 2019 and 2018 was \$1.1 billion and \$0.3 billion, respectively. We require collateral equal to at least 102% of the fair market value of the loaned security and that the collateral be in the form of cash or liquid, high-quality assets. We engage in these secured lending transactions only with highly creditworthy counterparties, and the associated portfolio custodian has agreed to indemnify us against collateral losses. We did not experience any losses in connection with the secured lending of securities during the periods presented. As of July 27, 2019 and July 28, 2018, we had no outstanding securities lending transactions.

(d) Variable Interest Entities

In the ordinary course of business, we have investments in privately held companies and provide financing to certain customers. These privately held companies and customers are evaluated for consolidation under the variable interest or voting interest entity models. We evaluate on an ongoing basis our investments in these privately held companies and our customer financings, and have determined that as of July 27, 2019, there were no significant variable interest or voting interest entities required to be consolidated in our Consolidated Financial Statements.

As of July 27, 2019, the carrying value of our investments in privately held companies was \$1.2 billion. \$656 million of such investments are considered to be in variable interest entities which are unconsolidated. We have total funding commitments of \$326 million related to these privately held investments, some of which are based on the achievement of certain agreed-upon milestones, and some of which are required to be funded on demand. The carrying value of these investments and the additional funding commitments collectively represent our maximum exposure related to these privately held investments.

10. Fair Value

(a) Assets and Liabilities Measured at Fair Value on a Recurring Basis

Assets and liabilities measured at fair value on a recurring basis were as follows (in millions):

	JULY 27, 2019			JULY 28, 2018		
	FAIR VALUE MEASUREMENTS			FAIR VALUE MEASUREMENTS		
	Level 1	Level 2	Total Balance	Level 1	Level 2	Total Balance
Assets:						
Cash equivalents:						
Money market funds	\$ 10,083	\$ —	\$ 10,083	\$ 6,890	\$ —	\$ 6,890
Available-for-sale debt investments:						
U.S. government securities	—	808	808	—	7,275	7,275
U.S. government agency securities	—	169	169	—	727	727
Non-U.S. government and agency securities	—	—	—	—	208	208
Corporate debt securities	—	19,262	19,262	—	27,364	27,364
U.S. agency mortgage-backed securities	—	1,421	1,421	—	1,435	1,435
Equity investments:						
Marketable equity securities	3	—	3	605	—	605
Derivative assets	—	89	89	—	2	2
Total	\$ 10,086	\$ 21,749	\$ 31,835	\$ 7,495	\$ 37,011	\$ 44,506
Liabilities:						
Derivative liabilities	\$ —	\$ 15	\$ 15	\$ —	\$ 74	\$ 74
Total	\$ —	\$ 15	\$ 15	\$ —	\$ 74	\$ 74

Level 1 marketable equity securities are determined by using quoted prices in active markets for identical assets. Level 2 available-for-sale debt investments are priced using quoted market prices for similar instruments or nonbinding market prices that are corroborated by observable market data. Our derivative instruments are primarily classified as Level 2, as they are not actively traded and are valued using pricing models that use observable market inputs. We did not have any transfers between Level 1 and Level 2 fair value measurements during the periods presented.

(b) Assets Measured at Fair Value on a Nonrecurring Basis

The following table presents gains and losses on assets that were measured at fair value on a nonrecurring basis (in millions):

	TOTAL GAINS (LOSSES) FOR THE YEARS ENDED		
	July 27, 2019	July 28, 2018	July 29, 2017
Non-marketable equity securities and equity method investments	\$ (32)	\$ (62)	\$ (177)
Purchased intangible assets (impaired)	—	(1)	(47)
Property held for sale - land and buildings	—	20	(30)
Total gains (losses) for nonrecurring measurements	\$ (32)	\$ (43)	\$ (254)

These assets were measured at fair value due to events or circumstances we identified as having significant impact on their fair value during the respective periods. The carrying value of our non-marketable equity securities recorded to fair value on a non-recurring basis is adjusted for observable transactions for identical or similar investments of the same issuer or impairment. These securities are classified as Level 3 in the fair value hierarchy because we estimate the value based on valuation methods using the observable transaction price at the transaction date and other unobservable inputs such as volatility, rights, and obligations of the securities we hold.

The fair value for purchased intangibles assets measured at fair value on a nonrecurring basis was categorized as Level 3 due to the use of significant unobservable inputs in the valuation. Significant unobservable inputs that were used included expected revenues and net income related to the assets and the expected life of the assets. The difference between the estimated fair value and the carrying value of the assets was recorded as an impairment charge, which was included in product cost of sales and operating expenses as applicable. See Note 5.

The fair value of property held for sale was measured with the assistance of third-party valuation models, which used discounted cash flow techniques as part of their analysis. The fair value measurement was categorized as Level 3, as significant unobservable inputs were used in the valuation report. The impairment charges as a result of the valuations, which represented the difference between the fair value less cost to sell and the carrying amount of the assets held for sale, were included in restructuring and other charges.

(c) Other Fair Value Disclosures

The fair value of our short-term loan receivables and financed service contracts approximates their carrying value due to their short duration. The aggregate carrying value of our long-term loan receivables and financed service contracts as of July 27, 2019 and July 28, 2018 was \$3.7 billion and \$3.6 billion, respectively. The estimated fair value of our long-term loan receivables and financed service contracts approximates their carrying value. We use significant unobservable inputs in determining discounted cash flows to estimate the fair value of our long-term loan receivables and financed service contracts, and therefore they are categorized as Level 3.

As of July 27, 2019 and July 28, 2018, the estimated fair value of our short-term debt approximates its carrying value due to the short maturities. As of July 27, 2019, the fair value of our senior notes and other long-term debt was \$22.1 billion, with a carrying amount of \$20.5 billion. This compares to a fair value of \$26.4 billion and a carrying amount of \$25.6 billion as of July 28, 2018. The fair value of the senior notes and other long-term debt was determined based on observable market prices in a less active market and was categorized as Level 2 in the fair value hierarchy.

11. Borrowings

(a) Short-Term Debt

The following table summarizes our short-term debt (in millions, except percentages):

	July 27, 2019		July 28, 2018	
	Amount	Effective Rate	Amount	Effective Rate
Current portion of long-term debt	\$ 5,998	3.20%	\$ 5,238	3.46%
Commercial paper	4,193	2.34%	—	—
Total short-term debt	\$ 10,191		\$ 5,238	

We have a short-term debt financing program of up to \$10.0 billion through the issuance of commercial paper notes. We use the proceeds from the issuance of commercial paper notes for general corporate purposes.

The effective rates for the short- and long-term debt include the interest on the notes, the accretion of the discount, the issuance costs, and, if applicable, adjustments related to hedging.

(b) Long-Term Debt

The following table summarizes our long-term debt (in millions, except percentages):

	Maturity Date	July 27, 2019		July 28, 2018	
		Amount	Effective Rate	Amount	Effective Rate
Senior notes:					
Floating-rate notes:					
Three-month LIBOR plus 0.50%	March 1, 2019	\$ —	—	\$ 500	2.86%
Three-month LIBOR plus 0.34%	September 20, 2019	500	2.77%	500	2.71%
Fixed-rate notes:					
4.95%	February 15, 2019	—	—	2,000	5.17%
1.60%	February 28, 2019	—	—	1,000	1.67%
2.125%	March 1, 2019	—	—	1,750	2.71%
1.40%	September 20, 2019	1,500	1.48%	1,500	1.48%
4.45%	January 15, 2020	2,500	4.72%	2,500	4.52%
2.45%	June 15, 2020	1,500	2.54%	1,500	2.54%
2.20%	February 28, 2021	2,500	2.30%	2,500	2.30%
2.90%	March 4, 2021	500	3.14%	500	2.86%
1.85%	September 20, 2021	2,000	1.90%	2,000	1.90%
3.00%	June 15, 2022	500	3.36%	500	3.11%
2.60%	February 28, 2023	500	2.68%	500	2.68%
2.20%	September 20, 2023	750	2.27%	750	2.27%
3.625%	March 4, 2024	1,000	3.25%	1,000	2.98%
3.50%	June 15, 2025	500	3.52%	500	3.27%
2.95%	February 28, 2026	750	3.01%	750	3.01%
2.50%	September 20, 2026	1,500	2.55%	1,500	2.55%
5.90%	February 15, 2039	2,000	6.11%	2,000	6.11%
5.50%	January 15, 2040	2,000	5.67%	2,000	5.67%
Total		20,500		25,750	
Unaccreted discount/issuance costs		(100)		(116)	
Hedge accounting fair value adjustments		73		(65)	
Total		<u>\$ 20,473</u>		<u>\$ 25,569</u>	
Reported as:					
Short-term debt		\$ 5,998		\$ 5,238	
Long-term debt		14,475		20,331	
Total		<u>\$ 20,473</u>		<u>\$ 25,569</u>	

We entered into interest rate swaps in prior periods with an aggregate notional amount of \$4.50 billion designated as fair value hedges of certain of our fixed-rate senior notes. These swaps convert the fixed interest rates of the fixed-rate notes to floating interest rates based on the London InterBank Offered Rate (LIBOR). The gains and losses related to changes in the fair value of the interest rate swaps substantially offset changes in the fair value of the hedged portion of the underlying debt that are attributable to the changes in market interest rates. For additional information, see Note 12.

Interest is payable semiannually on each class of the senior fixed-rate notes and payable quarterly on the floating-rate notes. Each of the senior fixed-rate notes is redeemable by us at any time, subject to a make-whole premium. The senior notes rank at par with the commercial paper notes that have been issued in the future pursuant to our short-term debt financing program, as discussed above under “(a) Short-Term Debt.” As of July 27, 2019, we were in compliance with all debt covenants.

As of July 27, 2019, future principal payments for long-term debt, including the current portion, are summarized as follows (in millions):

Fiscal Year	Amount
2020	\$ 6,000
2021	3,000
2022	2,500
2023	500
2024	1,750
Thereafter	6,750
Total	<u>\$ 20,500</u>

(c) Credit Facility

On May 15, 2015, we entered into a credit agreement with certain institutional lenders that provides for a \$3.0 billion unsecured revolving credit facility that is scheduled to expire on May 15, 2020. Any advances under the credit agreement will accrue interest at rates that are equal to, based on certain conditions, either (i) the highest of (a) the Federal Funds rate plus 0.50%, (b) Bank of America’s “prime rate” as announced from time to time, or (c) LIBOR, or a comparable or successor rate that is approved by the Administrative Agent (“Eurocurrency Rate”), for an interest period of one-month plus 1.00%, or (ii) the Eurocurrency Rate, plus a margin that is based on our senior debt credit ratings as published by Standard & Poor’s Financial Services, LLC and Moody’s Investors Service, Inc., provided that in no event will the Eurocurrency Rate be less than zero. We may also, upon the agreement of either the then-existing lenders or additional lenders not currently parties to the agreement, increase the commitments under the credit facility by up to an additional \$2.0 billion and/or extend the expiration date of the credit facility up to May 15, 2022.

This credit agreement requires that we comply with certain covenants, including that we maintain an interest coverage ratio as defined in the agreement. As of July 27, 2019, we were in compliance with the required interest coverage ratio and the other covenants, and we had not borrowed any funds under this credit facility.

12. Derivative Instruments

(a) Summary of Derivative Instruments

We use derivative instruments primarily to manage exposures to foreign currency exchange rate, interest rate, and equity price risks. Our primary objective in holding derivatives is to reduce the volatility of earnings and cash flows associated with changes in foreign currency exchange rates, interest rates, and equity prices. Our derivatives expose us to credit risk to the extent that the counterparties may be unable to meet the terms of the agreement. We do, however, seek to mitigate such risks by limiting our counterparties to major financial institutions. In addition, the potential risk of loss with any one counterparty resulting from this type of credit risk is monitored. Management does not expect material losses as a result of defaults by counterparties.

The fair values of our derivative instruments and the line items on the Consolidated Balance Sheets to which they were recorded are summarized as follows (in millions):

	DERIVATIVE ASSETS			DERIVATIVE LIABILITIES		
	Balance Sheet Line Item	July 27, 2019	July 28, 2018	Balance Sheet Line Item	July 27, 2019	July 28, 2018
Derivatives designated as hedging instruments:						
Foreign currency derivatives	Other current assets	\$ 5	\$ 1	Other current liabilities	\$ 8	\$ —
Interest rate derivatives	Other current assets	—	—	Other current liabilities	1	10
Interest rate derivatives	Other assets	75	—	Other long-term liabilities	—	62
Total		<u>80</u>	<u>1</u>		<u>9</u>	<u>72</u>
Derivatives not designated as hedging instruments:						
Foreign currency derivatives	Other current assets	9	1	Other current liabilities	6	2
Total		<u>9</u>	<u>1</u>		<u>6</u>	<u>2</u>
Total		<u>\$ 89</u>	<u>\$ 2</u>		<u>\$ 15</u>	<u>\$ 74</u>

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The effects of our cash flow and net investment hedging instruments on other comprehensive income (OCI) and the Consolidated Statements of Operations are summarized as follows (in millions):

	GAINS (LOSSES) RECOGNIZED IN OCI ON DERIVATIVES FOR THE YEARS ENDED (EFFECTIVE PORTION)			Line Item in Statements of Operations	GAINS (LOSSES) RECLASSIFIED FROM AOCI INTO INCOME FOR THE YEARS ENDED (EFFECTIVE PORTION)		
	July 27, 2019	July 28, 2018	July 29, 2017		July 27, 2019	July 28, 2018	July 29, 2017
Derivatives designated as cash flow hedging instruments:							
Foreign currency derivatives	\$ (1)	\$ 20	\$ 22	Revenue	\$ 2	\$ —	\$ —
				Cost of sales	—	16	(20)
				Operating expenses	1	52	(59)
Total	<u>\$ (1)</u>	<u>\$ 20</u>	<u>\$ 22</u>	Total	<u>\$ 3</u>	<u>\$ 68</u>	<u>\$ (79)</u>
Derivatives designated as net investment hedging instruments:							
Foreign currency derivatives	<u>\$ 4</u>	<u>\$ (1)</u>	<u>\$ (15)</u>	Other income (loss), net	<u>\$ —</u>	<u>\$ —</u>	<u>\$ —</u>

As of July 27, 2019, we estimate that approximately \$2 million of net derivative losses related to our cash flow hedges included in AOCI will be reclassified into earnings within the next 12 months when the underlying hedged item impacts earnings.

The effect on the Consolidated Statements of Operations of derivative instruments designated as fair value hedges and the underlying hedged items is summarized as follows (in millions):

Derivatives Designated as Fair Value Hedging Instruments	Line Item in Statements of Operations	GAINS (LOSSES) ON DERIVATIVE INSTRUMENTS FOR THE YEARS ENDED			GAINS (LOSSES) RELATED TO HEDGED ITEMS FOR THE YEARS ENDED		
		July 27, 2019	July 28, 2018	July 29, 2017	July 27, 2019	July 28, 2018	July 29, 2017
Interest rate derivatives	Interest expense	\$ 145	\$ (174)	\$ (275)	\$ (138)	\$ 173	\$ 271

The effect on the Consolidated Statements of Operations of derivative instruments not designated as hedges is summarized as follows (in millions):

Derivatives Not Designated as Hedging Instruments	Line Item in Statements of Operations	GAINS (LOSSES) FOR THE YEARS ENDED		
		July 27, 2019	July 28, 2018	July 29, 2017
Foreign currency derivatives	Other income (loss), net	\$ (60)	\$ (24)	\$ 13
Total return swaps—deferred compensation	Operating expenses	19	50	53
	Cost of sales	2	4	5
	Other income (loss), net	(16)	(11)	—
Equity derivatives	Other income (loss), net	3	(4)	11
Total		<u>\$ (52)</u>	<u>\$ 15</u>	<u>\$ 82</u>

The notional amounts of our outstanding derivatives are summarized as follows (in millions):

	July 27, 2019	July 28, 2018
Derivatives designated as hedging instruments:		
Foreign currency derivatives—cash flow hedges	\$ 663	\$ 147
Interest rate derivatives	4,500	6,750
Net investment hedging instruments	309	250
Derivatives not designated as hedging instruments:		
Foreign currency derivatives	2,708	2,298
Total return swaps—deferred compensation	574	566
Total	<u>\$ 8,754</u>	<u>\$ 10,011</u>

(b) Offsetting of Derivative Instruments

We present our derivative instruments at gross fair values in the Consolidated Balance Sheets. However, our master netting and other similar arrangements with the respective counterparties allow for net settlement under certain conditions, which are designed to reduce credit risk by permitting net settlement with the same counterparty. To further limit credit risk, we also enter into collateral security arrangements related to certain derivative instruments whereby cash is posted as collateral between the counterparties based on the fair market value of the derivative instrument. Information related to these offsetting arrangements is summarized as follows (in millions):

	GROSS AMOUNTS OFFSET IN THE CONSOLIDATED BALANCE SHEET			GROSS AMOUNTS NOT OFFSET IN THE CONSOLIDATED BALANCE SHEET BUT WITH LEGAL RIGHTS TO OFFSET		
	Gross Amounts Recognized	Gross Amounts Offset	Net Amounts Presented	Gross Derivative Amounts	Cash Collateral	Net Amount
<u>July 27, 2019</u>						
Derivatives assets	\$ 89	\$ —	\$ 89	\$ (13)	\$ (76)	\$ —
Derivatives liabilities	\$ 15	\$ —	\$ 15	\$ (13)	\$ —	\$ 2

	GROSS AMOUNTS OFFSET IN THE CONSOLIDATED BALANCE SHEET			GROSS AMOUNTS NOT OFFSET IN THE CONSOLIDATED BALANCE SHEET BUT WITH LEGAL RIGHTS TO OFFSET		
	Gross Amounts Recognized	Gross Amounts Offset	Net Amounts Presented	Gross Derivative Amounts	Cash Collateral	Net Amount
<u>July 28, 2018</u>						
Derivatives assets	\$ 2	\$ —	\$ 2	\$ (2)	\$ —	\$ —
Derivatives liabilities	\$ 74	\$ —	\$ 74	\$ (2)	\$ (53)	\$ 19

(c) Foreign Currency Exchange Risk

We conduct business globally in numerous currencies. Therefore, we are exposed to adverse movements in foreign currency exchange rates. To limit the exposure related to foreign currency changes, we enter into foreign currency contracts. We do not enter into such contracts for speculative purposes.

We hedge forecasted foreign currency transactions related to certain revenues, operating expenses and service cost of sales with currency options and forward contracts. These currency options and forward contracts, designated as cash flow hedges, generally have maturities of less than 24 months. The effective portion of the derivative instrument's gain or loss is initially reported as a component of AOCI and subsequently reclassified into earnings when the hedged exposure affects earnings. The ineffective portion, if any, of the gain or loss is reported in earnings immediately. During the fiscal years presented, we did not discontinue any cash flow hedges for which it was probable that a forecasted transaction would not occur.

We enter into foreign exchange forward and option contracts to reduce the short-term effects of foreign currency fluctuations on assets and liabilities such as foreign currency receivables, including long-term customer financings, investments, and payables. These derivatives are not designated as hedging instruments. Gains and losses on the contracts are included in other income (loss), net, and substantially offset foreign exchange gains and losses from the remeasurement of intercompany balances or other current assets, investments, or liabilities denominated in currencies other than the functional currency of the reporting entity.

We hedge certain net investments in our foreign operations with forward contracts to reduce the effects of foreign currency fluctuations on our net investment in those foreign subsidiaries. These derivative instruments generally have maturities of up to six months.

(d) Interest Rate Risk

Interest Rate Derivatives Designated as Fair Value Hedges, Long-Term Debt We hold interest rate swaps designated as fair value hedges related to fixed-rate senior notes that are due in fiscal 2020 through 2025. Under these interest rate swaps, we receive fixed-rate interest payments and make interest payments based on LIBOR plus a fixed number of basis points. The effect of such swaps is to convert the fixed interest rates of the senior fixed-rate notes to floating interest rates based on LIBOR. The gains and losses related to changes in the fair value of the interest rate swaps are included in interest expense and substantially offset changes in the fair value of the hedged portion of the underlying debt that are attributable to the changes in market interest rates.

(e) Equity Price Risk

We hold marketable equity securities in our portfolio that are subject to price risk. To diversify our overall portfolio, we also hold equity derivatives that are not designated as accounting hedges. The change in the fair value of each of these investment types are included in other income (loss), net.

We are also exposed to variability in compensation charges related to certain deferred compensation obligations to employees. Although not designated as accounting hedges, we utilize derivatives such as total return swaps to economically hedge this exposure and offset the related compensation expense.

(f) Hedge Effectiveness

For the fiscal years presented, there were no components excluded from the assessment of hedge effectiveness for fair value or cash flow hedges, and the amounts excluded for net investment hedges was not material. In addition, hedge ineffectiveness for fair value, cash flow and net investment hedges was not material for any of the periods presented.

13. Commitments and Contingencies

(a) Operating Leases

We lease office space in many U.S. locations. Outside the United States, larger leased sites include sites in Australia, Belgium, Canada, China, Germany, India, Japan, Mexico, Poland, and the United Kingdom. We also lease equipment and vehicles. Future minimum lease payments under all noncancelable operating leases with an initial term in excess of one year as of July 27, 2019 are as follows (in millions):

Fiscal Year	Amount
2020	\$ 441
2021	299
2022	195
2023	120
2024	70
Thereafter	54
Total	\$ 1,179

Rent expense for office space and equipment totaled \$433 million, \$442 million, and \$403 million in fiscal 2019, 2018, and 2017, respectively.

(b) Purchase Commitments with Contract Manufacturers and Suppliers

We purchase components from a variety of suppliers and use several contract manufacturers to provide manufacturing services for our products. During the normal course of business, in order to manage manufacturing lead times and help ensure adequate component supply, we enter into agreements with contract manufacturers and suppliers that either allow them to procure inventory based upon criteria as defined by us or establish the parameters defining our requirements. A significant portion of our reported purchase commitments arising from these agreements consists of firm, noncancelable, and unconditional commitments. Certain of these purchase commitments with contract manufacturers and suppliers relate to arrangements to secure long-term pricing for certain product components for multi-year periods. In certain instances, these agreements allow us the option to cancel, reschedule, and adjust our requirements based on our business needs prior to firm orders being placed.

The following table summarizes our purchase commitments with contract manufacturers and suppliers (in millions):

Commitments by Period	July 27, 2019	July 28, 2018
Less than 1 year	\$ 4,239	\$ 5,407
1 to 3 years	728	710
3 to 5 years	—	360
Total	\$ 4,967	\$ 6,477

We record a liability for firm, noncancelable, and unconditional purchase commitments for quantities in excess of our future demand forecasts consistent with the valuation of our excess and obsolete inventory. As of July 27, 2019 and July 28, 2018, the liability for these purchase commitments was \$129 million and \$159 million, respectively, and was included in other current liabilities.

(c) Other Commitments

In connection with our acquisitions, we have agreed to pay certain additional amounts contingent upon the achievement of certain agreed-upon technology, development, product, or other milestones or upon the continued employment with Cisco of certain employees of the acquired entities.

The following table summarizes the compensation expense related to acquisitions (in millions):

	July 27, 2019	July 28, 2018	July 29, 2017
Compensation expense related to acquisitions	\$ 313	\$ 203	\$ 212

As of July 27, 2019, we estimated that future cash compensation expense of up to \$440 million may be required to be recognized pursuant to the applicable business combination agreements.

We also have certain funding commitments, primarily related to our non-marketable equity and other investments, some of which are based on the achievement of certain agreed-upon milestones, and some of which are required to be funded on demand. The funding commitments were \$326 million and \$223 million as of July 27, 2019 and July 28, 2018, respectively.

(d) Product Warranties

The following table summarizes the activity related to the product warranty liability (in millions):

	July 27, 2019	July 28, 2018	July 29, 2017
Balance at beginning of fiscal year	\$ 359	\$ 407	\$ 414
Provisions for warranties issued	600	582	691
Adjustments for pre-existing warranties	(12)	(38)	(21)
Settlements	(603)	(592)	(677)
Acquisitions and divestitures	(2)	—	—
Balance at end of fiscal year	\$ 342	\$ 359	\$ 407

We accrue for warranty costs as part of our cost of sales based on associated material product costs, labor costs for technical support staff, and associated overhead. Our products are generally covered by a warranty for periods ranging from 90 days to five years, and for some products we provide a limited lifetime warranty.

(e) Financing and Other Guarantees

In the ordinary course of business, we provide financing guarantees for various third-party financing arrangements extended to channel partners and end-user customers. Payments under these financing guarantee arrangements were not material for the periods presented.

Channel Partner Financing Guarantees We facilitate arrangements for third-party financing extended to channel partners, consisting of revolving short-term financing, generally with payment terms ranging from 60 to 90 days. These financing arrangements facilitate the working capital requirements of the channel partners, and, in some cases, we guarantee a portion of these arrangements. The volume of channel partner financing was \$29.6 billion, \$28.2 billion, and \$27.0 billion in fiscal 2019, 2018, and 2017, respectively. The balance of the channel partner financing subject to guarantees was \$1.4 billion and \$1.0 billion as of July 27, 2019 and July 28, 2018, respectively.

End-User Financing Guarantees We also provide financing guarantees for third-party financing arrangements extended to end-user customers related to leases and loans, which typically have terms of up to three years. The volume of financing provided by third parties for leases and loans as to which we had provided guarantees was \$14 million, \$35 million, and \$51 million in fiscal 2019, 2018, and 2017, respectively.

Financing Guarantee Summary The aggregate amounts of financing guarantees outstanding at July 27, 2019 and July 28, 2018, representing the total maximum potential future payments under financing arrangements with third parties along with the related deferred revenue, are summarized in the following table (in millions):

	July 27, 2019	July 28, 2018
Maximum potential future payments relating to financing guarantees:		
Channel partner	\$ 197	\$ 277
End user	21	31
Total	\$ 218	\$ 308
Deferred revenue associated with financing guarantees:		
Channel partner	\$ (62)	\$ (94)
End user	(15)	(28)
Total	\$ (77)	\$ (122)
Maximum potential future payments relating to financing guarantees, net of associated deferred revenue	\$ 141	\$ 186

(f) Indemnifications

In the normal course of business, we indemnify other parties, including customers, lessors, and parties to other transactions with us, with respect to certain matters. We have agreed to indemnify against losses arising from a breach of representations or covenants or out of intellectual property infringement or other claims made against certain parties. These agreements may limit the time within which an indemnification claim can be made and the amount of the claim.

We have been asked to indemnify Time Warner Cable (“TWC”) for patent infringement claims asserted against it by Sprint Communications Company, L.P. (“Sprint”) in federal court in Kansas. Sprint alleges that TWC infringed certain Sprint patents by offering VoIP telephone services utilizing products provided by us generally in combination with those of other manufacturers. Sprint seeks monetary damages. Following a trial on March 3, 2017, a jury in Kansas found that TWC willfully infringed five Sprint patents and awarded Sprint \$139.8 million in damages. On March 14, 2017, the Kansas court declined Sprint's request for enhanced damages and entered judgment in favor of Sprint for \$139.8 million plus 1.06% in post-judgment interest. On May 30, 2017, the Court awarded Sprint \$20.3 million in pre-judgment interest and denied TWC's post-trial motions. TWC appealed to the U.S. Court of Appeals for the Federal Circuit, and, on November 30, 2018, a panel of the court affirmed the judgment. TWC filed a petition for rehearing *en banc* on January 29, 2019, which was denied on March 19, 2019. TWC has petitioned the United States Supreme Court for review of the judgment. At this time, we do not believe that our indemnity obligations under our agreement would be material.

During fiscal 2018, we recorded legal and indemnification settlement charges of \$127 million to product cost of sales related to prior indemnification matters resolved in fiscal 2018.

In addition, we have entered into indemnification agreements with our officers and directors, and our Amended and Restated Bylaws contain similar indemnification obligations to our agents.

It is not possible to determine the maximum potential amount under these indemnification agreements due to our limited history with prior indemnification claims and the unique facts and circumstances involved in each particular agreement. Historically, payments made by us under these agreements have not had a material effect on our operating results, financial position, or cash flows.

(g) Legal Proceedings

Brazil Brazilian authorities have investigated our Brazilian subsidiary and certain of our former employees, as well as a Brazilian importer of our products, and its affiliates and employees, relating to alleged evasion of import taxes and alleged improper transactions involving the subsidiary and the importer. Brazilian tax authorities have assessed claims against our Brazilian subsidiary based on a theory of joint liability with the Brazilian importer for import taxes, interest, and penalties. In addition to claims asserted by the Brazilian federal tax authorities in prior fiscal years, tax authorities from the Brazilian state of Sao Paulo have asserted similar claims on the same legal basis in prior fiscal years.

The asserted claims by Brazilian federal tax authorities that remain are for calendar years 2003 through 2007, and the asserted claims by the tax authorities from the state of Sao Paulo are for calendar years 2005 through 2007. The total asserted claims by Brazilian state and federal tax authorities aggregate to \$214 million for the alleged evasion of import and other taxes, \$1.4 billion for interest, and \$1.0 billion for various penalties, all determined using an exchange rate as of July 27, 2019. We have completed a thorough review of the matters and believe the asserted claims against our Brazilian subsidiary are without merit, and we are defending the claims vigorously. While we believe there is no legal basis for the alleged liability, due to the complexities and

uncertainty surrounding the judicial process in Brazil and the nature of the claims asserting joint liability with the importer, we are unable to determine the likelihood of an unfavorable outcome against our Brazilian subsidiary and are unable to reasonably estimate a range of loss, if any. We do not expect a final judicial determination for several years.

SRI International On September 4, 2013, SRI International, Inc. (“SRI”) asserted patent infringement claims against us in the U.S. District Court for the District of Delaware, accusing our products and services in the area of network intrusion detection of infringing two U.S. patents. SRI sought monetary damages of at least a reasonable royalty and enhanced damages. The trial on these claims began on May 2, 2016 and, on May 12, 2016, the jury returned a verdict finding willful infringement of the asserted patents. The jury awarded SRI damages of \$23.7 million. On May 25, 2017, the Court awarded SRI enhanced damages and attorneys’ fees, entered judgment in the new amount of \$57.0 million, and ordered an ongoing royalty of 3.5% through the expiration of the patents in 2018. We appealed to the United States Court of Appeals for the Federal Circuit on various grounds. On March 20, 2019, a panel of the Federal Circuit vacated the enhanced damages award; vacated and remanded in part the willful infringement finding; and affirmed the district court’s other findings. Cisco filed a petition for rehearing with the Federal Circuit on May 10, 2019. On July 12, 2019, the panel granted in part Cisco’s petition for rehearing, denied Cisco’s petition for an en banc review by the entire Federal Circuit, reaffirmed its earlier determination regarding a portion of the judgment, issued a modified opinion vacating the attorneys’ fees award, and remanded portions of the judgment to the District Court of Delaware for further proceedings. Cisco’s \$25.9 million payment, representing the portion of the judgment that the Federal Circuit affirmed plus interest, will be paid by September 18, 2019, and will be subject to a refund if any portion of the affirmed judgment is reversed or vacated by the United States Supreme Court. While the remanded proceedings may result in an additional loss, we do not expect it to be material.

Straight Path On September 24, 2014, Straight Path IP Group, Inc. (“Straight Path”) asserted patent infringement claims against us in the U.S. District Court for the Northern District of California, accusing our 9971 IP Phone, Unified Communications Manager working in conjunction with 9971 IP Phones, and Video Communication Server products of infringement. All of the asserted patents have expired and Straight Path was therefore limited to seeking monetary damages for the alleged past infringement. On November 13, 2017, the Court granted our motion for summary judgment of non-infringement, thereby dismissing Straight Path’s claims against us and cancelling a trial which had been set for March 12, 2018. Straight Path appealed to the U.S. Court of Appeal for the Federal Circuit, and, on January 23, 2019, the court summarily affirmed the finding of non-infringement. On August 23, 2019, Straight Path filed a petition with the United States Supreme Court challenging the constitutionality of the Federal Circuit’s rule allowing summary affirmance.

Oyster Optics On November 24, 2016, Oyster Optics, LLC (“Oyster”) asserted patent infringement claims against us in the U.S. District Court for the Eastern District of Texas. Oyster alleges that certain Cisco ONS 15454 and NCS 2000 line cards infringe U.S. Patent No. 7,620,327 (“the ‘327 Patent”). Oyster seeks monetary damages. Oyster filed infringement claims based on the ‘327 Patent against other defendants, including ZTE, Nokia, NEC, Infinera, Huawei, Ciena, Alcatel-Lucent, and Fujitsu, and the court consolidated the cases alleging infringement of the ‘327 Patent. Oyster’s cases against some of the defendants were resolved. The court vacated the November 4, 2018 trial date set for Oyster’s claims against Cisco and one other remaining defendant, pending resolution of Oyster’s appeal of the court’s summary judgment ruling dismissing certain of Oyster’s claims. Oyster appealed the summary judgment ruling on December 6, 2018. While we believe that we have strong non-infringement arguments and that the patent is invalid, if Oyster prevails in its appeal of the summary judgment ruling, and if we do not prevail in the District Court in a subsequent trial, we believe damages ultimately assessed would not be material. Due to uncertainty surrounding patent litigation processes, we are unable to reasonably estimate the ultimate outcome of this litigation at this time. However, we do not anticipate that any final outcome of the dispute would be material.

In addition, we are subject to legal proceedings, claims, and litigation arising in the ordinary course of business, including intellectual property litigation. While the outcome of these matters is currently not determinable, we do not expect that the ultimate costs to resolve these matters will have a material adverse effect on our consolidated financial position, results of operations, or cash flows.

For additional information regarding intellectual property litigation, see “Part I, Item 1A. Risk Factors-We may be found to infringe on intellectual property rights of others” of this Annual Report on Form 10-K.

14. Shareholders’ Equity

(a) Cash Dividends on Shares of Common Stock

We declared and paid cash dividends of \$1.36, \$1.24 and \$1.10 per common share, or \$6.0 billion, \$6.0 billion and \$5.5 billion, on our outstanding common stock during fiscal 2019, 2018, and 2017, respectively.

Any future dividends will be subject to the approval of our Board of Directors.

(b) Stock Repurchase Program

In September 2001, our Board of Directors authorized a stock repurchase program. On February 13, 2019, our Board of Directors authorized a \$15 billion increase to the stock repurchase program. As of July 27, 2019, the remaining authorized amount for stock repurchases under this program, including the additional authorization, is approximately \$13.5 billion, with no termination date.

A summary of the stock repurchase activity under the stock repurchase program, reported based on the trade date, is as follows (in millions, except per-share amounts):

Years Ended	Shares	Weighted-Average Price per Share		Amount
July 27, 2019	418	\$	49.22	\$ 20,577
July 28, 2018	432	\$	40.88	\$ 17,661
July 29, 2017	118	\$	31.38	\$ 3,706

There were \$40 million, \$180 million and \$66 million in stock repurchases pending settlement as of July 27, 2019, July 28, 2018 and July 29, 2017, respectively.

The purchase price for the shares of our stock repurchased is reflected as a reduction to shareholders' equity.

We are required to allocate the purchase price of the repurchased shares as (i) a reduction to retained earnings or increase to accumulated deficit and (ii) a reduction of common stock and additional paid-in capital.

(c) Preferred Stock

Under the terms of our Articles of Incorporation, the Board of Directors may determine the rights, preferences, and terms of our authorized but unissued shares of preferred stock.

15. Employee Benefit Plans**(a) Employee Stock Incentive Plans**

Stock Incentive Plan Program Description As of July 27, 2019, we had one stock incentive plan: the 2005 Stock Incentive Plan (the "2005 Plan"). In addition, we have, in connection with our acquisitions of various companies, assumed the share-based awards granted under stock incentive plans of the acquired companies or issued share-based awards in replacement thereof. Share-based awards are designed to reward employees for their long-term contributions to us and provide incentives for them to remain with Cisco. The number and frequency of share-based awards are based on competitive practices, operating results of Cisco, government regulations, and other factors. Our primary stock incentive plan is summarized as follows:

2005 Plan The 2005 Plan provides for the granting of stock options, stock grants, stock units and stock appreciation rights (SARs), the vesting of which may be time-based or upon satisfaction of performance goals, or both, and/or other conditions. Employees (including employee directors and executive officers) and consultants of Cisco and its subsidiaries and affiliates and non-employee directors of Cisco are eligible to participate in the 2005 Plan. As of July 27, 2019, the maximum number of shares issuable under the 2005 Plan over its term was 694 million shares. The 2005 Plan may be terminated by the Board of Directors at any time and for any reason, and is currently set to terminate at the 2021 Annual Meeting unless re-adopted or extended by the shareholders prior to or on such date.

Under the 2005 Plan's share reserve feature, a distinction is made between the number of shares in the reserve attributable to (i) stock options and SARs and (ii) "full value" awards (i.e., stock grants and stock units). Shares issued as stock grants, pursuant to stock units or pursuant to the settlement of dividend equivalents are counted against shares available for issuance under the 2005 Plan on a 1.5-to-1 ratio. If awards issued under the 2005 Plan are forfeited or terminated for any reason before being exercised or settled, then the shares underlying such awards, plus the number of additional shares, if any, that counted against shares available for issuance under the 2005 Plan at the time of grant as a result of the application of the share ratio described above, will become available again for issuance under the 2005 Plan.

(b) Employee Stock Purchase Plan

We have an Employee Stock Purchase Plan under which 721.4 million shares of our common stock have been reserved for issuance as of July 27, 2019. Eligible employees are offered shares through a 24-month offering period, which consists of four consecutive 6-month purchase periods. Employees may purchase a limited amount of shares of our stock at a discount of up to 15% of the lesser of the fair market value at the beginning of the offering period or the end of each 6-month purchase period. The Employee Stock Purchase Plan is scheduled to terminate on the earlier of (i) January 3, 2030 and (ii) the date on which all shares available for issuance under the Employee Stock Purchase Plan are sold pursuant to exercised purchase rights. We issued 19 million, 22 million, and 23 million shares under the Employee Stock Purchase Plan in fiscal 2019, 2018, and 2017, respectively. As of July 27, 2019, 159 million shares were available for issuance under the Employee Stock Purchase Plan.

(c) Summary of Share-Based Compensation Expense

Share-based compensation expense consists primarily of expenses for stock options, stock purchase rights, restricted stock, and RSUs granted to employees. The following table summarizes share-based compensation expense (in millions):

<u>Years Ended</u>	<u>July 27, 2019</u>	<u>July 28, 2018</u>	<u>July 29, 2017</u>
Cost of sales—product	\$ 90	\$ 94	\$ 85
Cost of sales—service	130	133	134
Share-based compensation expense in cost of sales	220	227	219
Research and development	540	538	529
Sales and marketing	519	555	542
General and administrative	250	246	236
Restructuring and other charges	62	33	3
Share-based compensation expense in operating expenses	1,371	1,372	1,310
Total share-based compensation expense	\$ 1,591	\$ 1,599	\$ 1,529
Income tax benefit for share-based compensation	\$ 542	\$ 558	\$ 451

As of July 27, 2019, the total compensation cost related to unvested share-based awards not yet recognized was \$3.3 billion, which is expected to be recognized over approximately 2.8 years on a weighted-average basis.

(d) Share-Based Awards Available for Grant

A summary of share-based awards available for grant is as follows (in millions):

<u>Years Ended</u>	<u>July 27, 2019</u>	<u>July 28, 2018</u>	<u>July 29, 2017</u>
Balance at beginning of fiscal year	245	272	242
Restricted stock, stock units, and other share-based awards granted	(67)	(70)	(76)
Share-based awards canceled/forfeited/expired	18	18	78
Shares withheld for taxes and not issued	23	25	28
Other	1	—	—
Balance at end of fiscal year	220	245	272

For each share awarded as restricted stock or a restricted stock unit award under the 2005 Plan, 1.5 shares was deducted from the available share-based award balance. For restricted stock units that were awarded with vesting contingent upon the achievement of future financial performance or market-based metrics, the maximum awards that can be achieved upon full vesting of such awards were reflected in the preceding table.

(e) Restricted Stock and Stock Unit Awards

A summary of the restricted stock and stock unit activity, which includes time-based and performance-based or market-based RSUs, is as follows (in millions, except per-share amounts):

	Restricted Stock/ Stock Units	Weighted-Average Grant Date Fair Value per Share	Aggregate Fair Value
UNVESTED BALANCE AT JULY 30, 2016	145	\$ 24.26	
Granted	50	27.89	
Assumed from acquisitions	15	32.21	
Vested	(54)	23.14	\$ 1,701
Canceled/forfeited/other	(15)	23.56	
UNVESTED BALANCE AT JULY 29, 2017	141	26.94	
Granted	46	35.62	
Assumed from acquisitions	1	28.26	
Vested	(53)	26.02	\$ 1,909
Canceled/forfeited/other	(16)	28.37	
UNVESTED BALANCE AT JULY 28, 2018	119	30.56	
Granted	45	47.71	
Vested	(50)	29.25	\$ 2,446
Canceled/forfeited/other	(14)	32.01	
UNVESTED BALANCE AT JULY 27, 2019	100	\$ 38.66	

(f) Stock Option Awards

A summary of the stock option activity is as follows (in millions, except per-share amounts):

	STOCK OPTIONS OUTSTANDING	
	Number Outstanding	Weighted-Average Exercise Price per Share
BALANCE AT JULY 30, 2016	73	\$ 26.78
Assumed from acquisitions	8	4.47
Exercised	(14)	12.11
Canceled/forfeited/expired	(55)	31.83
BALANCE AT JULY 29, 2017	12	6.15
Assumed from acquisitions	3	8.20
Exercised	(8)	5.77
Canceled/forfeited/expired	(1)	8.75
BALANCE AT JULY 28, 2018	6	7.18
Exercised	(4)	7.12
BALANCE AT JULY 27, 2019	2	\$ 6.94

The total pretax intrinsic value of stock options exercised during fiscal 2019, 2018, and 2017 was \$149 million, \$257 million, and \$283 million, respectively.

The total number of in-the-money stock options exercisable as of July 27, 2019 and July 28, 2018 were 2 million and 4 million, respectively. As of July 27, 2019 and July 28, 2018, 2 million and 4 million outstanding stock options were exercisable and the weighted-average exercise price was \$6.75 and \$6.84, respectively.

(g) Valuation of Employee Share-Based Awards

Time-based restricted stock units and PRSUs that are based on our financial performance metrics or non-financial operating goals are valued using the market value of our common stock on the date of grant, discounted for the present value of expected dividends. On the date of grant, we estimated the fair value of the total shareholder return (TSR) component of the PRSUs using a Monte Carlo simulation model. The assumptions for the valuation of time-based RSUs and PRSUs are summarized as follows:

Years Ended	RESTRICTED STOCK UNITS		
	July 27, 2019	July 28, 2018	July 29, 2017
Number of shares granted (in millions)	43	43	43
Grant date fair value per share	\$ 47.75	\$ 35.81	\$ 28.38
Weighted-average assumptions/inputs:			
Expected dividend yield	2.7%	3.2%	3.5%
Range of risk-free interest rates	0.0% – 2.9%	0.0% – 2.7%	0.0% – 1.5%

Years Ended	PERFORMANCE BASED RESTRICTED STOCK UNITS		
	July 27, 2019	July 28, 2018	July 29, 2017
Number of shares granted (in millions)	2	3	7
Grant date fair value per share	\$ 47.00	\$ 32.69	\$ 28.94
Weighted-average assumptions/inputs:			
Expected dividend yield	2.8%	3.5%	3.4%
Range of risk-free interest rates	2.1% – 3.0%	1.0% – 2.7%	0.1% – 1.5%
Range of expected volatilities for index	13.0% - 65.2%	12.5% - 82.8%	16.7% – 46.8%

The PRSUs granted during the fiscal years presented are contingent on the achievement of our financial performance metrics, our comparative market-based returns, or the achievement of financial and non-financial operating goals. For the awards based on financial performance metrics or comparative market-based returns, generally 50% of the PRSUs are earned based on the average of annual operating cash flow and earnings per share goals established at the beginning of each fiscal year over a three-year performance period. Generally, the remaining 50% of the PRSUs are earned based on our TSR measured against the benchmark TSR of a peer group over the same period. Each PRSU recipient could vest in 0% to 150% of the target shares granted contingent on the achievement of our financial performance metrics or our comparative market-based returns, and 0% to 100% of the target shares granted contingent on the achievement of non-financial operating goals.

The assumptions for the valuation of employee stock purchase rights are summarized as follows:

Years Ended	EMPLOYEE STOCK PURCHASE RIGHTS		
	July 27, 2019	July 28, 2018	July 29, 2017
Weighted-average assumptions:			
Expected volatility	20.4%	22.1%	24.6%
Risk-free interest rate	1.9%	1.3%	0.7%
Expected dividend	3.0%	3.1%	3.2%
Expected life (in years)	1.3	1.3	1.3
Weighted-average estimated grant date fair value per share	\$ 9.06	\$ 7.48	\$ 6.52

The valuation of employee stock purchase rights and the related assumptions are for the employee stock purchases made during the respective fiscal years.

We used third-party analyses to assist in developing the assumptions used in our Black-Scholes model. We are responsible for determining the assumptions used in estimating the fair value of our share-based payment awards.

We used the implied volatility for traded options (with contract terms corresponding to the expected life of the employee stock purchase rights) on our stock as the expected volatility assumption required in the Black-Scholes model. The implied volatility is more representative of future stock price trends than historical volatility. The risk-free interest rate assumption is based upon observed interest rates appropriate for the term of our employee stock purchase rights. The dividend yield assumption is based on the history and expectation of dividend payouts at the grant date.

(h) Employee 401(k) Plans

We sponsor the Cisco Systems, Inc. 401(k) Plan (the “Plan”) to provide retirement benefits for our employees. As allowed under Section 401(k) of the Internal Revenue Code, the Plan provides for tax-deferred salary contributions and after-tax contributions for eligible employees. The Plan allows employees to contribute up to 75% of their annual eligible earnings to the Plan on a pretax and after-tax basis, including Roth contributions. Employee contributions are limited to a maximum annual amount as set periodically by the Internal Revenue Code. We match pretax and Roth employee contributions up to 100% of the first 4.5% of eligible earnings that are contributed by employees. Therefore, the maximum matching contribution that we may allocate to each participant’s account will not exceed \$12,600 for the 2019 calendar year due to the \$280,000 annual limit on eligible earnings imposed by the Internal Revenue Code. All matching contributions vest immediately. Our matching contributions to the Plan totaled \$283 million, \$269 million, and \$265 million in fiscal 2019, 2018, and 2017, respectively.

The Plan allows employees who meet the age requirements and reach the Plan contribution limits to make catch-up contributions (pretax or Roth) not to exceed the lesser of 75% of their annual eligible earnings or the limit set forth in the Internal Revenue Code. Catch-up contributions are not eligible for matching contributions. In addition, the Plan provides for discretionary profit-sharing contributions as determined by the Board of Directors. Such contributions to the Plan are allocated among eligible participants in the proportion of their salaries to the total salaries of all participants. There were no discretionary profit-sharing contributions made in fiscal 2019, 2018, and 2017.

We also sponsor other 401(k) plans as a result of acquisitions of other companies. Our contributions to these plans were not material to Cisco on either an individual or aggregate basis for any of the fiscal years presented.

(i) Deferred Compensation Plans

The Cisco Systems, Inc. Deferred Compensation Plan (the “Deferred Compensation Plan”), a nonqualified deferred compensation plan, became effective in 2007. As required by applicable law, participation in the Deferred Compensation Plan is limited to a select group of our management employees. Under the Deferred Compensation Plan, which is an unfunded and unsecured deferred compensation arrangement, a participant may elect to defer base salary, bonus, and/or commissions, pursuant to such rules as may be established by Cisco, up to the maximum percentages for each deferral election as described in the plan. We may also, at our discretion, make a matching contribution to the employee under the Deferred Compensation Plan. A matching contribution equal to 4.5% of eligible compensation in excess of the Internal Revenue Code limit for qualified plans for calendar year 2019 that is deferred by participants under the Deferred Compensation Plan (with a \$1.5 million cap on eligible compensation) will be made to eligible participants’ accounts at the end of calendar year 2019. The total deferred compensation liability under the Deferred Compensation Plan, together with deferred compensation plans assumed from acquired companies, was approximately \$678 million and \$651 million as of July 27, 2019 and July 28, 2018, respectively, and was recorded primarily in other long-term liabilities.

16. Comprehensive Income (Loss)

The components of AOCI, net of tax, and the other comprehensive income (loss), excluding noncontrolling interest, are summarized as follows (in millions):

	Net Unrealized Gains (Losses) on Available- for-Sale Investments	Net Unrealized Gains (Losses) Cash Flow Hedging Instruments	Cumulative Translation Adjustment and Actuarial Gains and Losses	Accumulated Other Comprehensive Income (Loss)
BALANCE AT JULY 30, 2016	\$ 413	\$ (59)	\$ (680)	\$ (326)
Other comprehensive income (loss) before reclassifications attributable to Cisco Systems, Inc.	(164)	22	318	176
(Gains) losses reclassified out of AOCI	87	79	16	182
Tax benefit (expense)	37	(10)	(13)	14
Total change for the period	(40)	91	321	372
BALANCE AT JULY 29, 2017	373	32	(359)	46
Other comprehensive income (loss) before reclassifications attributable to Cisco Systems, Inc.	(543)	21	(159)	(681)
(Gains) losses reclassified out of AOCI	(287)	(68)	7	(348)
Tax benefit (expense)	93	4	(8)	89
Total change for the period	(737)	(43)	(160)	(940)
Effect of adoption of accounting standard	54	—	(9)	45
BALANCE AT JULY 28, 2018	(310)	(11)	(528)	(849)
Other comprehensive income (loss) before reclassifications attributable to Cisco Systems, Inc.	560	—	(267)	293
(Gains) losses reclassified out of AOCI	13	(3)	2	12
Tax benefit (expense)	(95)	—	15	(80)
Total change for the period	478	(3)	(250)	225
Effect of adoption of accounting standards	(168)	—	—	(168)
BALANCE AT JULY 27, 2019	\$ —	\$ (14)	\$ (778)	\$ (792)

The net gains (losses) reclassified out of AOCI into the Consolidated Statements of Operations, with line item location, during each period were as follows (in millions):

Comprehensive Income Components	July 27, 2019	July 28, 2018	July 29, 2017	Line Item in Statements of Operations
	Income Before Taxes			
Net unrealized gains and losses on available-for-sale investments	\$ (13)	\$ 287	\$ (87)	Other income (loss), net
Net unrealized gains and losses on cash flow hedging instruments				
Foreign currency derivatives	2	—	—	Revenue
Foreign currency derivatives	—	16	(20)	Cost of sales
Foreign currency derivatives	1	52	(59)	Operating expenses
	3	68	(79)	
Cumulative translation adjustment and actuarial gains and losses	—	(7)	(16)	Operating expenses
Cumulative translation adjustment and actuarial gains and losses	(2)	—	—	Other income (loss), net
Total amounts reclassified out of AOCI	\$ (12)	\$ 348	\$ (182)	

17. Income Taxes

(a) Provision for Income Taxes

The provision for income taxes consists of the following (in millions):

Years Ended	July 27, 2019	July 28, 2018	July 29, 2017
Federal:			
Current	\$ 1,760	\$ 9,900	\$ 1,300
Deferred	(84)	1,156	(42)
	1,676	11,056	1,258
State:			
Current	302	340	86
Deferred	(2)	(232)	56
	300	108	142
Foreign:			
Current	1,238	1,789	1,416
Deferred	(264)	(24)	(138)
	974	1,765	1,278
Total	\$ 2,950	\$ 12,929	\$ 2,678

Income before provision for income taxes consists of the following (in millions):

Years Ended	July 27, 2019	July 28, 2018	July 29, 2017
United States	\$ 7,611	\$ 3,765	\$ 2,393
International	6,960	9,274	9,894
Total	\$ 14,571	\$ 13,039	\$ 12,287

The items accounting for the difference between income taxes computed at the federal statutory rate and the provision for income taxes consist of the following:

Years Ended	July 27, 2019	July 28, 2018	July 29, 2017
Federal statutory rate	21.0 %	27.0 %	35.0 %
Effect of:			
State taxes, net of federal tax benefit	2.0	0.6	1.1
Foreign income at other than U.S. rates	(4.5)	(5.2)	(13.4)
Tax credits	(1.7)	(2.5)	(1.2)
Foreign-derived intangible income deduction	(1.3)	—	—
Domestic manufacturing deduction	—	(0.5)	(0.4)
Stock-based compensation	(0.6)	(0.1)	1.4
Impact of the Tax Act	6.1	80.1	—
Other, net	(0.8)	(0.2)	(0.7)
Total	20.2 %	99.2 %	21.8 %

On December 22, 2017, the Tax Act was enacted. The Tax Act significantly revises the U.S. corporate income tax by, among other things, lowering the statutory corporate income tax rate ("federal tax rate") from 35% to 21% effective January 1, 2018, implementing a modified territorial tax system, and imposing a mandatory one-time transition tax on accumulated earnings of foreign subsidiaries.

During fiscal 2018, we recorded a provisional tax expense of \$10.4 billion related to the Tax Act. The provisional tax expense included an \$863 million benefit associated with the U.S. taxation of deemed foreign dividends in the transition fiscal year. As previously disclosed, the benefit could be subject to reduction or elimination by subsequent government action. In the fourth quarter of fiscal 2019 we recorded an \$872 million charge, which was the reversal of the previously recorded benefit associated with the U.S. taxation of deemed foreign dividends recorded in fiscal 2018, as a result of a retroactive final U.S. Treasury regulation issued during the quarter.

The total tax charge as a result of the Tax Act was \$11.3 billion, consisting of \$9.0 billion of tax expense for the U.S. transition tax on accumulated earnings of foreign subsidiaries, \$1.2 billion of foreign withholding tax and \$1.1 billion of tax expense for DTA re-measurement.

The Tax Act includes a Global Intangible Low-Taxed Income (GILTI) provision that imposes U.S. tax on certain foreign subsidiary income in the year it is earned. Our accounting policy is to treat tax on GILTI as a current period cost included in tax expense in the year incurred.

Foreign taxes associated with the repatriation of earnings of foreign subsidiaries were not provided on a cumulative total of \$6.6 billion of undistributed earnings for certain foreign subsidiaries as of the end of fiscal 2019. We intend to reinvest these earnings indefinitely in such foreign subsidiaries. If these earnings were distributed in the form of dividends or otherwise, or if the shares of the relevant foreign subsidiaries were sold or otherwise transferred, we could be subject to additional foreign taxes. The amount of potential unrecognized deferred income tax liability related to these earnings is approximately \$711 million.

As a result of certain employment and capital investment actions, our income in certain foreign countries is subject to reduced tax rates. A portion of these incentives expired at the end of fiscal 2015. The remaining tax incentives expired at the end of fiscal 2019. The gross income tax benefit attributable to tax incentives was estimated to be \$0.3 billion (\$0.08 per diluted share) in fiscal 2019. As of the end of fiscal 2018 and 2017, the gross income tax benefits attributable to tax incentives were estimated to be \$0.9 billion and \$1.3 billion (\$0.19 and \$0.25 per diluted share) for the respective years. The gross income tax benefits were partially offset by accruals of U.S. income taxes on foreign earnings.

Unrecognized Tax Benefits

The aggregate changes in the balance of gross unrecognized tax benefits were as follows (in millions):

<u>Years Ended</u>	<u>July 27, 2019</u>	<u>July 28, 2018</u>	<u>July 29, 2017</u>
Beginning balance	\$ 2,000	\$ 1,973	\$ 1,627
Additions based on tax positions related to the current year	185	251	336
Additions for tax positions of prior years	84	84	180
Reductions for tax positions of prior years	(283)	(129)	(78)
Settlements	(38)	(124)	(43)
Lapse of statute of limitations	(23)	(55)	(49)
Ending balance	\$ 1,925	\$ 2,000	\$ 1,973

As of July 27, 2019, \$1.7 billion of the unrecognized tax benefits would affect the effective tax rate if realized. During fiscal 2019, we recognized \$30 million of net interest expense and \$6 million of penalty expense. During fiscal 2018, we recognized \$10 million of net interest expense and no net penalty expense. During fiscal 2017, we recognized \$26 million of net interest expense and a \$4 million reduction in penalties. Our total accrual for interest and penalties was \$220 million, \$180 million, and \$186 million as of the end of fiscal 2019, 2018, and 2017, respectively. We are no longer subject to U.S. federal income tax audit for returns covering tax years through fiscal 2010. We are no longer subject to foreign or state income tax audits for returns covering tax years through fiscal 1999 and fiscal 2008, respectively.

We regularly engage in discussions and negotiations with tax authorities regarding tax matters in various jurisdictions. We believe it is reasonably possible that certain federal, foreign, and state tax matters may be concluded in the next 12 months. Specific positions that may be resolved include issues involving transfer pricing and various other matters. We estimate that the unrecognized tax benefits at July 27, 2019 could be reduced by \$50 million in the next 12 months.

(b) Deferred Tax Assets and Liabilities

The following table presents the breakdown for net deferred tax assets (in millions):

	<u>July 27, 2019</u>	<u>July 28, 2018</u>
Deferred tax assets	\$ 4,065	\$ 3,219
Deferred tax liabilities	(95)	(141)
Total net deferred tax assets	\$ 3,970	\$ 3,078

The following table presents the components of the deferred tax assets and liabilities (in millions):

	July 27, 2019	July 28, 2018
ASSETS		
Allowance for doubtful accounts and returns	\$ 127	\$ 285
Sales-type and direct-financing leases	176	171
Inventory write-downs and capitalization	409	289
Investment provisions	—	54
IPR&D, goodwill, and purchased intangible assets	1,427	63
Deferred revenue	1,150	1,584
Credits and net operating loss carryforwards	1,241	1,087
Share-based compensation expense	164	190
Accrued compensation	342	370
Other	419	408
Gross deferred tax assets	5,455	4,501
Valuation allowance	(457)	(374)
Total deferred tax assets	4,998	4,127
LIABILITIES		
Purchased intangible assets	(705)	(753)
Depreciation	(141)	(118)
Unrealized gains on investments	(70)	(33)
Other	(112)	(145)
Total deferred tax liabilities	(1,028)	(1,049)
Total net deferred tax assets	\$ 3,970	\$ 3,078

As of July 27, 2019, our federal, state, and foreign net operating loss carryforwards for income tax purposes were \$676 million, \$1 billion, and \$756 million, respectively. A significant amount of the net operating loss carryforwards relates to acquisitions and, as a result, is limited in the amount that can be recognized in any one year. If not utilized, the federal, state and foreign net operating loss carryforwards will begin to expire in fiscal 2020. We have provided a valuation allowance of \$111 million for deferred tax assets related to foreign net operating losses that are not expected to be realized.

As of July 27, 2019, our federal, state, and foreign tax credit carryforwards for income tax purposes were approximately \$25 million, \$1.1 billion, and \$5 million, respectively. The federal tax credit carryforwards will begin to expire in fiscal 2020. The majority of state and foreign tax credits can be carried forward indefinitely. We have provided a valuation allowance of \$346 million for deferred tax assets related to state and foreign tax credits that are not expected to be realized.

18. Segment Information and Major Customers

(a) Revenue and Gross Margin by Segment

We conduct business globally and are managed on a geographic basis consisting of three segments: the Americas, EMEA, and APJC. Our management makes financial decisions and allocates resources based on the information it receives from our internal management system. Sales are attributed to a segment based on the ordering location of the customer. We do not allocate research and development, sales and marketing, or general and administrative expenses to our segments in this internal management system because management does not include the information in our measurement of the performance of the operating segments. In addition, we do not allocate amortization and impairment of acquisition-related intangible assets, share-based compensation expense, significant litigation settlements and other contingencies, charges related to asset impairments and restructurings, and certain other charges to the gross margin for each segment because management does not include this information in our measurement of the performance of the operating segments.

Summarized financial information by segment for fiscal 2019, 2018, and 2017, based on our internal management system and as utilized by our Chief Operating Decision Maker (CODM), is as follows (in millions):

Years Ended	July 27, 2019	July 28, 2018	July 29, 2017
Revenue:			
Americas	\$ 30,927	\$ 29,070	\$ 28,351
EMEA	13,100	12,425	12,004
APJC	7,877	7,834	7,650
Total	\$ 51,904	\$ 49,330	\$ 48,005
Gross margin:			
Americas	\$ 20,338	\$ 18,792	\$ 18,284
EMEA	8,457	7,945	7,855
APJC	4,683	4,726	4,741
Segment total	33,479	31,463	30,880
Unallocated corporate items	(813)	(857)	(656)
Total	\$ 32,666	\$ 30,606	\$ 30,224

Amounts may not sum and percentages may not recalculate due to rounding.

Revenue in the United States was \$27.4 billion, \$25.5 billion, and \$25.0 billion for fiscal 2019, 2018, and 2017, respectively.

(b) Revenue for Groups of Similar Products and Services

We design, manufacture, and sell IP-based networking and other products related to the communications and IT industry and provide services associated with these products and their use.

The following table presents revenue for groups of similar products and services (in millions):

Years Ended	July 27, 2019	July 28, 2018	July 29, 2017
Revenue:			
Infrastructure Platforms	\$ 30,191	\$ 28,322	\$ 27,817
Applications	5,803	5,036	4,568
Security	2,730	2,352	2,152
Other Products	281	999	1,168
Total Product	39,005	36,709	35,705
Services	12,899	12,621	12,300
Total ⁽¹⁾	\$ 51,904	\$ 49,330	\$ 48,005

⁽¹⁾ Includes SPVSS business revenue of \$168 million and \$903 million for fiscal 2019 and 2018, respectively.

(c) Additional Segment Information

The majority of our assets as of July 27, 2019 and July 28, 2018 were attributable to our U.S. operations. In fiscal 2019, 2018, and 2017, no single customer accounted for 10% or more of revenue.

Property and equipment information is based on the physical location of the assets. The following table presents property and equipment information for geographic areas (in millions):

	July 27, 2019	July 28, 2018	July 29, 2017
Property and equipment, net:			
United States	\$ 2,266	\$ 2,487	\$ 2,711
International	523	519	611
Total	\$ 2,789	\$ 3,006	\$ 3,322

19. Net Income per Share

The following table presents the calculation of basic and diluted net income per share (in millions, except per-share amounts):

<u>Years Ended</u>	<u>July 27, 2019</u>	<u>July 28, 2018</u>	<u>July 29, 2017</u>
Net income	\$ 11,621	\$ 110	\$ 9,609
Weighted-average shares—basic	4,419	4,837	5,010
Effect of dilutive potential common shares	34	44	39
Weighted-average shares—diluted	4,453	4,881	5,049
Net income per share—basic	\$ 2.63	\$ 0.02	\$ 1.92
Net income per share—diluted	\$ 2.61	\$ 0.02	\$ 1.90
Antidilutive employee share-based awards, excluded	55	61	136

Employee equity share options, unvested shares, and similar equity instruments granted and assumed by Cisco are treated as potential common shares outstanding in computing diluted earnings per share. Diluted shares outstanding include the dilutive effect of in-the-money options, unvested restricted stock, and restricted stock units. The dilutive effect of such equity awards is calculated based on the average share price for each fiscal period using the treasury stock method. Under the treasury stock method, the amount the employee must pay for exercising stock options and the amount of compensation cost for future service that has not yet recognized are collectively assumed to be used to repurchase shares.

Supplementary Financial Data (Unaudited)

(in millions, except per-share amounts)

Quarters Ended	July 27, 2019 ⁽¹⁾	April 27, 2019	January 26, 2019	October 27, 2018
Revenue	\$ 13,428	\$ 12,958	\$ 12,446	\$ 13,072
Gross margin	\$ 8,574	\$ 8,173	\$ 7,773	\$ 8,146
Operating income	\$ 3,690	\$ 3,513	\$ 3,211	\$ 3,805
Net income	\$ 2,206	\$ 3,044	\$ 2,822	\$ 3,549
Net income per share - basic	\$ 0.52	\$ 0.70	\$ 0.63	\$ 0.78
Net income per share - diluted	\$ 0.51	\$ 0.69	\$ 0.63	\$ 0.77
Cash dividends declared per common share	\$ 0.35	\$ 0.35	\$ 0.33	\$ 0.33
Cash and cash equivalents and investments	\$ 33,413	\$ 34,643	\$ 40,383	\$ 42,593

Quarters Ended	July 28, 2018 ⁽²⁾	April 28, 2018	January 27, 2018 ⁽³⁾	October 28, 2017
Revenue	\$ 12,844	\$ 12,463	\$ 11,887	\$ 12,136
Gross margin	\$ 7,922	\$ 7,759	\$ 7,498	\$ 7,427
Operating income	\$ 3,346	\$ 3,134	\$ 3,073	\$ 2,756
Net income (loss)	\$ 3,803	\$ 2,691	\$ (8,778)	\$ 2,394
Net income (loss) per share - basic	\$ 0.81	\$ 0.56	\$ (1.78)	\$ 0.48
Net income (loss) per share - diluted	\$ 0.81	\$ 0.56	\$ (1.78)	\$ 0.48
Cash dividends declared per common share	\$ 0.33	\$ 0.33	\$ 0.29	\$ 0.29
Cash and cash equivalents and investments	\$ 46,548	\$ 54,431	\$ 73,683	\$ 71,588

⁽¹⁾ In the fourth quarter of fiscal 2019, we recorded an \$872 million charge which was the reversal of the previously recorded benefit associated with the U.S. taxation of deemed foreign dividends recorded in fiscal 2018 as a result of a retroactive final U.S. Treasury regulation issued during the quarter.

⁽²⁾ In the fourth quarter of fiscal 2018, we recorded adjustments to the provisional amounts related to the U.S. transition tax on accumulated earnings of foreign subsidiaries and re-measurement of net deferred tax assets. These adjustments included an \$863 million benefit to the U.S. transition tax provisional amount related to the U.S. taxation of deemed foreign dividends in the transition fiscal year.

⁽³⁾ In the second quarter of fiscal 2018, we recorded a provisional tax expense of \$11.1 billion related to the Tax Act, comprised of \$9.0 billion of U.S. transition tax, \$1.2 billion of foreign withholding tax, and \$0.9 billion re-measurement of net DTA.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosures

None.

Item 9A. Controls and Procedures
Evaluation of Disclosure Controls and Procedures

Based on our management's evaluation (with the participation of our principal executive officer and principal financial officer), as of the end of the period covered by this report, our principal executive officer and principal financial officer have concluded that our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended, (the "Exchange Act")) are effective to ensure that information required to be disclosed by us in reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in Securities and Exchange Commission rules and forms and is accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate to allow timely decisions regarding required disclosure.

Internal Control over Financial Reporting

Management's report on our internal control over financial reporting and the report of our independent registered public accounting firm on our internal control over financial reporting are set forth, respectively, on page 57 under the caption "Management's Report on Internal Control Over Financial Reporting" and on page 55 of this report.

There was no change in our internal control over financial reporting during our fourth quarter of fiscal 2019 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The information required by this item relating to our directors and nominees is included under the captions “Board of Directors - Proposal No. 1 —Election of Directors,” “Board of Directors —Proposal No. 1 —Business Experience and Qualifications of Nominees,” and “Board of Directors —Proposal No. 1—Board Meetings and Committees —Nomination and Governance Committee” in our Proxy Statement related to the 2019 Annual Meeting of Shareholders and is incorporated herein by reference.

The information required by this item regarding our Audit Committee is included under the caption “Board of Directors — Proposal No. 1 —Board Meetings and Committees” and “Audit Committee Matters” in our Proxy Statement related to the 2019 Annual Meeting of Shareholders and is incorporated herein by reference.

Pursuant to General Instruction G(3) of Form 10-K, the information required by this item relating to our executive officers is included under the caption “Information about our Executive Officers” in Part I of this report.

With regard to the information required by this item regarding compliance with Section 16(a) of the Exchange Act, we will provide disclosure of delinquent Section 16(a) reports, if any, in our Proxy Statement related to the 2019 Annual Meeting of Shareholders, and such disclosure, if any, is incorporated herein by reference.

We have adopted a code of ethics that applies to our principal executive officer and all members of our finance department, including the principal financial officer and principal accounting officer. This code of ethics is entitled “Special Ethics Obligations for Employees with Financial Reporting Responsibilities: Financial Officer Code of Ethics” and can be found at the “Financial Officer Code of Ethics” link in the Governance Section of Cisco’s Investor Relations website at investor.cisco.com.

We intend to satisfy any disclosure requirement under Item 5.05 of Form 8-K regarding an amendment to, or waiver from, a provision of this code of ethics by posting such information on our investor relations website.

Item 11. Executive Compensation

The information required by this item relating to executive compensation is included under the captions “Compensation Committee Matters — Proposal No. 2 — Advisory Vote to Approve Executive Compensation,” “Compensation Committee Matters —Compensation Discussion and Analysis,” “Compensation Committee Matters —Compensation Committee Report,” “Compensation Committee Matters —Compensation Committee Interlocks and Insider Participation,” “Compensation Committee Matters —Fiscal 2019 Compensation Tables —Summary Compensation Table,” “Compensation Committee Matters —Fiscal 2019 Compensation Tables —Grants of Plan-Based Awards - Fiscal 2019” and “Compensation Committee Matters —Fiscal 2019 Compensation Tables —CEO Pay Ratio” in our Proxy Statement related to the 2019 Annual Meeting of Shareholders and is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information required by this item relating to security ownership of certain beneficial owners and management is included under the caption “Compensation Committee Matters —Ownership of Securities,” and the information required by this item relating to securities authorized for issuance under equity compensation plans is included under the caption “Compensation Committee Matters —Equity Compensation Plan Information,” in each case in our Proxy Statement related to the 2019 Annual Meeting of Shareholders, and is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required by this item relating to review, approval or ratification of transactions with related persons is included under the caption “Audit Committee Matters —Certain Relationships and Transactions with Related Persons,” and the information required by this item relating to director independence is included under the caption “Board of Directors —Proposal No. 1 —Election of Directors —Independent Directors,” in each case in our Proxy Statement related to the 2019 Annual Meeting of Shareholders, and is incorporated herein by reference.

Item 14. Principal Accountant Fees and Services

The information required by this item is included under the captions “Audit Committee Matters —Proposal No. 3 — Ratification of Independent Registered Public Accounting Firm —Principal Accountant Fees and Services” and “Audit Committee Matters —Proposal No. 3 — Policy on Audit Committee Pre-Approval of Audit and Permissible Non-Audit Services of Independent Registered Public Accounting Firm” in our Proxy Statement related to the 2019 Annual Meeting of Shareholders, and is incorporated herein by reference.

PART IV

Item 15. Exhibits and Financial Statement Schedules

- (a) 1. Financial Statements
See the “Index to Consolidated Financial Statements” on page 54 of this report.
2. Financial Statement Schedule
See “Schedule II—Valuation and Qualifying Accounts” (below) within Item 15 of this report.
3. Exhibits
See the “Index to Exhibits” beginning on page 109 of this report.

SCHEDULE II

**VALUATION AND QUALIFYING ACCOUNTS
(in millions)**

	Allowances For	
	Financing Receivables	Accounts Receivable
Year ended July 29, 2017		
Balance at beginning of fiscal year	\$ 375	\$ 249
Provisions (benefits)	(35)	27
Recoveries (write-offs), net	(49)	(61)
Foreign exchange and other	4	(4)
Balance at end of fiscal year	\$ 295	\$ 211
Year ended July 28, 2018		
Balance at beginning of fiscal year	\$ 295	\$ 211
Provisions (benefits)	(89)	(45)
Recoveries (write-offs), net	(6)	(37)
Foreign exchange and other	5	—
Balance at end of fiscal year	\$ 205	\$ 129
Year ended July 27, 2019		
Balance at beginning of fiscal year	\$ 205	\$ 129
Provisions (benefits)	(16)	56
Recoveries (write-offs), net	(42)	(50)
Foreign exchange and other	(21)	1
Balance at end of fiscal year	\$ 126	\$ 136

Foreign exchange and other includes the impact of foreign exchange and certain immaterial reclassifications.

INDEX TO EXHIBITS

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
3.1	Restated Articles of Incorporation of Cisco Systems, Inc., as currently in effect	S-3	333-56004	4.1	2/21/2001	
3.2	Amended and Restated Bylaws of Cisco Systems, Inc., as currently in effect	8-K	000-18225	3.1	7/29/2016	
4.1	Indenture, dated February 17, 2009, between Cisco Systems, Inc. and the Bank of New York Mellon Trust Company, N.A., as trustee	8-K	000-18225	4.1	2/17/2009	
4.2	Indenture, dated November 17, 2009, between Cisco Systems, Inc. and the Bank of New York Mellon Trust Company, N.A., as trustee	8-K	000-18225	4.1	11/17/2009	
4.3	Indenture, dated March 3, 2014, between the Company and The Bank of New York Mellon Trust Company, N.A., as trustee	8-K	000-18225	4.1	3/3/2014	
4.4	Forms of Global Note for the registrant's 5.90% Senior Notes due 2039	8-K	000-18225	4.1	2/17/2009	
4.5	Forms of Global Note for the registrant's 4.45% Senior Notes due 2020 and 5.50% Senior Notes due 2040	8-K	000-18225	4.1	11/17/2009	
4.6	Form of Officer's Certificate setting forth the terms of the Fixed and Floating Rate Notes issued in March 2014	8-K	000-18225	4.2	3/3/2014	
4.7	Form of Officer's Certificate setting forth the terms of the Fixed and Floating Notes issued in June 2015	8-K	000-18225	4.1	6/18/2015	
4.8	Form of Officer's Certificate setting forth the terms of the Fixed and Floating Notes issued in February 2016	8-K	000-18225	4.1	2/29/2016	
4.9	Form of Officer's Certificate setting forth the terms of the Fixed and Floating Notes issued in September 2016	8-K	000-18225	4.1	9/20/2016	
4.10	Description of Securities Registered Under Section 12 of the Exchange Act					X
10.1*	Cisco Systems, Inc. 2005 Stock Incentive Plan (including related form agreements)	10-K	000-18225	10.1	9/6/2018	
10.2*	Cisco Systems, Inc. Employee Stock Purchase Plan	8-K	000-18225	10.1	12/13/2018	
10.3*	Cisco Systems, Inc. Deferred Compensation Plan, as amended	10-Q	000-18225	10.2	2/19/2019	
10.4*	Cisco Systems, Inc. Executive Incentive Plan	8-K	000-18225	10.2	12/12/2017	
10.5*	Form of Executive Officer Indemnification Agreement	10-K	000-18225	10.7	9/20/2004	
10.6*	Form of Director Indemnification Agreement	10-K	000-18225	10.8	9/20/2004	
10.7*	Offer Letter, Letter of Transfer and Relocation Payback Agreement by and between Cisco Systems, Inc. and Geraldine Elliott	10-Q	000-18225	10.1	11/20/2018	
10.8*	Offer Letter, Letter of Transfer and Relocation Payback Agreement by and between Cisco Systems, Inc. and Maria Martinez	10-Q	000-18225	10.2	11/20/2018	
10.9	Credit Agreement dated as of May 15, 2015, by and among Cisco Systems, Inc. and Lenders party thereto, and Bank of America, N.A., as administration agent, swing line lender and an L/C issuer	10-Q	000-18225	10.1	5/20/2015	
10.10	Form of Commercial Paper Dealer Agreement	10-Q	000-18225	10.1	2/23/2011	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
10.11	Commercial Paper Issuing and Paying Agent Agreement dated January 31, 2011 between the Registrant and Bank of America, N.A.	10-Q	000-18225	10.2	2/23/2011	
21.1	Subsidiaries of the Registrant					X
23.1	Consent of Independent Registered Public Accounting Firm					X
24.1	Power of Attorney (included on page 111 of this Annual Report on Form 10-K)					X
31.1	Rule 13a-14(a)/15d-14(a) Certification of Principal Executive Officer					X
31.2	Rule 13a-14(a)/15d-14(a) Certification of Principal Financial Officer					X
32.1	Section 1350 Certification of Principal Executive Officer					X
32.2	Section 1350 Certification of Principal Financial Officer					X
101.INS	XBRL Instance Document					X
101.SCH	XBRL Taxonomy Extension Schema Document					X
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document					X
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document					X
101.LAB	XBRL Taxonomy Extension Label Linkbase Document					X
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document					X

* Indicates a management contract or compensatory plan or arrangement.

Item 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this Report on Form 10-K to be signed on its behalf by the undersigned, thereunto duly authorized.

September 5, 2019

CISCO SYSTEMS, INC.

/S/ CHARLES H. ROBBINS

Charles H. Robbins
Chairman and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Charles H. Robbins and Kelly A. Kramer, jointly and severally, his attorney-in-fact, each with the full power of substitution, for such person, in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney-in-fact and agent full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he might do or could do in person hereby ratifying and confirming all that each of said attorneys-in-fact and agents, or his substitute, may do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this Report on Form 10-K has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<hr/> <p>/S/ CHARLES H. ROBBINS Charles H. Robbins</p>	Chairman and Chief Executive Officer (Principal Executive Officer)	September 5, 2019
<hr/> <p>/S/ KELLY A. KRAMER Kelly A. Kramer</p>	Executive Vice President and Chief Financial Officer (Principal Financial Officer)	September 5, 2019
<hr/> <p>/S/ PRAT S. BHATT Prat S. Bhatt</p>	Senior Vice President, Corporate Controller and Chief Accounting Officer (Principal Accounting Officer)	September 5, 2019

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<hr/> <p>/S/ M. MICHELE BURNS M. Michele Burns</p>	Director	September 5, 2019
<hr/> <p>/S/ WESLEY G. BUSH Wesley G. Bush</p>	Director	September 5, 2019
<hr/> <p>/S/ MICHAEL D. CAPELLAS Michael D. Capellas</p>	Lead Independent Director	September 5, 2019
<hr/> <p>/S/ MARK GARRETT Mark Garrett</p>	Director	September 5, 2019
<hr/> <p>/S/ KRISTINA M. JOHNSON Dr. Kristina M. Johnson</p>	Director	September 5, 2019
<hr/> <p>/S/ RODERICK C. MCGEARY Roderick C. McGeary</p>	Director	September 5, 2019
<hr/> <p>/S/ ARUN SARIN Arun Sarin</p>	Director	September 5, 2019
<hr/> <p>/S/ BRENTON L. SAUNDERS Brenton L. Saunders</p>	Director	September 5, 2019
<hr/> <p>/S/ STEVEN M. WEST Steven M. West</p>	Director	September 5, 2019

**DESCRIPTION OF THE REGISTRANT'S SECURITIES
REGISTERED PURSUANT TO SECTION 12 OF THE SECURITIES
EXCHANGE ACT OF 1934**

Cisco Systems, Inc. ("Cisco," "we," "our," or "us") has one class of securities registered under Section 12 of the Securities Exchange Act of 1934, as amended: our common stock.

DESCRIPTION OF CAPITAL STOCK

The following summary of the terms of our capital stock is based upon our Restated Articles of Incorporation (the "Articles of Incorporation") and our Amended and Restated Bylaws (the "Bylaws"). The summary is not complete, and is qualified by reference to our [Articles of Incorporation](#) and our [Bylaws](#), which are filed as exhibits to this Annual Report on Form 10-K and are incorporated by reference herein. We encourage you to read our Articles of Incorporation, our Bylaws and the applicable provisions of the California Corporations Code for additional information.

Authorized Shares of Capital Stock

Our authorized capital stock consists of twenty (20) billion shares of common stock, \$0.001 par value, and five (5) million shares of preferred stock. As of August 30, 2019, there were 4,245,290,230 shares of Cisco common stock issued and outstanding and no shares of Cisco preferred stock issued and outstanding. The outstanding shares of our common stock are duly authorized, validly issued, fully paid, and nonassessable.

Listing

Our common stock is listed and principally traded on The Nasdaq Stock Market LLC under the symbol "CSCO."

Voting Rights

Each holder of shares of our common stock is entitled to one (1) vote for each share held of record by such holder on the applicable record date on all matters submitted to a vote of shareholders. Pursuant to our Articles of Incorporation, shareholders do not have the right to vote cumulatively.

Dividend Rights

Subject to any preferential dividend rights granted to the holders of any shares of our preferred stock that may at the time be outstanding, holders of our common stock are entitled to receive dividends as may be declared from time to time by our board of directors out of funds legally available therefor.

Rights upon Liquidation

Subject to any preferential rights of outstanding shares of preferred stock, holders of our common stock are entitled to share pro rata, upon any liquidation or dissolution of Cisco, in all remaining assets legally available for distribution to shareholders.

Other Rights and Preferences

Our common stock has no sinking fund, redemption provisions, or preemptive, conversion, or exchange rights. Special meetings of shareholders may be called by shareholders holding shares representing not less than 10% of the outstanding votes entitled to vote at the meeting. Holders of our common stock may also act by unanimous written consent.

Transfer Agent and Registrar

Computershare Investor Services is the transfer agent and registrar for our common stock.

Certain Anti-Takeover Effects

Certain provisions of our Articles of Incorporation and Bylaws may be deemed to have an anti-takeover effect.

Advance Notice Requirements for Shareholder Proposals and Director Nominations. Our Bylaws provide advance notice procedures for shareholders seeking to bring business before our annual meeting of shareholders or to nominate candidates for election as directors at our annual meeting of shareholders and specify certain requirements regarding the form and content of a shareholder's notice. These provisions might preclude our shareholders from bringing matters before our annual meeting of shareholders or from making nominations for directors at our annual meeting of shareholders if the proper procedures are not followed.

Additional Authorized Shares of Capital Stock. The additional shares of authorized common stock and preferred stock available for issuance under our Articles of Incorporation, including shares of our Series A Preferred Stock, could be issued at such times, under such circumstances and with such terms and conditions as to impede a change in control.

SUBSIDIARIES OF THE REGISTRANT

Subsidiaries	State Or Other Jurisdiction of Incorporation or Organization
"Cisco Internetworking" Limited Liability Company	Armenia
47Line Technologies LLC	Delaware
47Line Technologies Private Limited	India
Acano (UK) Limited	United Kingdom
Acano AS	Norway
Acano LLC	Delaware
Accompani LLC	Delaware
Airespace Wireless Networks Private Limited	India
AppDynamics Asia Pacific Pte. Ltd	Singapore
AppDynamics International LLC	Delaware
AppDynamics International Ltd	United Kingdom
AppDynamics LLC	Delaware
AppDynamics Proprietary Limited	South Africa
AppDynamics S. de R.L. de C.V.	Mexico
AppDynamics S.L.U.	Spain
AppDynamics SA, en liquidation	Switzerland
AppDynamics Sdn. Bhd.	Malaysia
AppDynamics Technologies India Private Limited	India
AppDynamics Technologies Intermediacao de Software Ltda.	Brazil
AppDynamics UK Ltd	United Kingdom
BGPmon Network Solutions Inc.	Canada
BroadHop India Private Limited	India
BroadHop International B.V.	Netherlands
BroadHop LLC	Delaware
BroadSoft Adaption LLC	Delaware
BroadSoft Australia Pty Limited	Australia
BroadSoft Brazil Software Ltda.	Brazil
BroadSoft Bulgaria EOOD	Bulgaria
BroadSoft Contact Center LLC	Delaware
BroadSoft Design LLC	Delaware
BroadSoft Finland Oy	Finland
BroadSoft Germany GmbH	Germany
BroadSoft iLinc Communications LLC	Delaware
BroadSoft International LLC	Delaware
BroadSoft Italy Srl	Italy
BroadSoft Japan KK	Japan
BroadSoft Ltd	United Kingdom
BroadSoft Mexico SA de CV	Mexico
BroadSoft Netherlands B.V. in liquidatie/in liquidation	Netherlands
BroadSoft SAS	France
BroadSoft Technologies Private Ltd.	India
BroadSoft UK Holding Company Ltd	United Kingdom
BroadSoft UK Operating Company Ltd	United Kingdom
BroadSoft UK Technologies Limited	United Kingdom
BroadSoft, Inc.	Delaware
Castup Israel Ltd.	Israel
Center for Cisco Heritage, LLC	Delaware
Cisco (China) Innovation Technology Co., Ltd.	China
Cisco (China) Technology Services Co., Ltd.	China

<u>Subsidiaries</u>	State Or Other Jurisdiction of Incorporation or Organization
Cisco Bahrain (SPC)	Bahrain
Cisco Bilgisayar ve Internet Sistemleri Limited Sirketi	Turkey
Cisco Capital (Dubai) Limited	United Arab Emirates
Cisco Capital Mexico, S. de R.L. de C.V.	Mexico
Cisco China Company, Limited	China
Cisco China Holdings (HK) Limited	Hong Kong
Cisco Comercio e Servicos de Hardware e Software do Brasil Ltda	Brazil
Cisco Commerce India Private Limited	India
Cisco Development India Private Limited	India
Cisco do Brasil Ltda	Brazil
Cisco Dutch Holdings B.V.	Netherlands
Cisco Holdings Cayman Ltd	Cayman Islands
Cisco Innovation International Sàrl, en liquidation	Switzerland
Cisco International Israel Limited	Israel
Cisco International Limited	United Kingdom
Cisco International Taiwan, Ltd.	Taiwan
Cisco Internetworking Systems Hellas S.A.	Greece
Cisco Investments B.V.	Netherlands
Cisco Investments LLC	Delaware
Cisco Ironport Systems LLC	Delaware
Cisco ISH B.V.	Netherlands
Cisco Malaysia Managed Services SDN. BHD.	Malaysia
Cisco Managed Solutions, Inc.	Delaware
Cisco Morocco	Morocco
Cisco Norway AS	Norway
Cisco Norway Holdings AS	Norway
Cisco OpenDNS LLC	Delaware
Cisco Optical GmbH	Germany
Cisco Photonics Italy S.r.l.	Italy
Cisco QSTP-LLC	Qatar
Cisco Ravenscourt LLC	Delaware
Cisco Renting Italy S.r.l.	Italy
Cisco RG Israel Ltd	Israel
Cisco Saudi Arabia Limited	Saudi Arabia
Cisco SCM (Thailand) Limited	Thailand
Cisco Serbia doo Beograd	Serbia
Cisco Services (Hong Kong) Limited	Hong Kong
Cisco Services Korea Limited	Republic of Korea
Cisco Services Malaysia SDN BHD	Malaysia
Cisco Solutions GmbH	Germany
Cisco Solutions Guatemala, Limitada	Guatemala
Cisco Systems (Argentina) S.A.	Argentina
Cisco Systems (Bermuda) Holdings Ltd.	Bermuda
Cisco Systems (China) Information Technology Services Limited	China
Cisco Systems (China) Networking Technology Co., Ltd.	China
Cisco Systems (China) Research and Development Co., Ltd.	China
Cisco Systems (Colombia) Limitada	Colombia
Cisco Systems (Czech Republic) s.r.o.	Czech Republic
Cisco Systems (Ethiopia) PLC	Ethiopia
Cisco Systems (HK) Holdings Limited	Hong Kong
Cisco Systems (HK) Limited	Hong Kong

<u>Subsidiaries</u>	State Or Other Jurisdiction of Incorporation or Organization
Cisco Systems (Italy) S.r.l.	Italy
Cisco Systems (Jordan)	Jordan
Cisco Systems (Korea) Limited	Republic of Korea
Cisco Systems (Malaysia) SDN. BHD.	Malaysia
Cisco Systems (Myanmar) Company Limited	Myanmar
Cisco Systems (Nigeria) Limited	Nigeria
Cisco Systems (Puerto Rico) Corp.	Delaware
Cisco Systems (Senegal) SUARL	Senegal
Cisco Systems (Shanghai) Video Technology Co., Ltd.	China
Cisco Systems (South Africa) (Proprietary) Limited	South Africa
Cisco Systems (Spain), S.L.	Spain
Cisco Systems (Sweden) AB	Sweden
Cisco Systems (Switzerland) GmbH	Switzerland
Cisco Systems (Switzerland) Investments Ltd.	Bermuda
Cisco Systems (Thailand) Limited	Thailand
Cisco Systems (Trinidad & Tobago) Limited	Trinidad and Tobago
Cisco Systems (USA) Pte. Ltd.	Singapore
Cisco Systems Algeria EURL	Algeria
Cisco Systems Australia Pty Limited	Australia
Cisco Systems Austria GmbH	Austria
Cisco Systems Belgium SPRL	Belgium
Cisco Systems Bulgaria EOOD	Bulgaria
Cisco Systems Canada Co. / Les Systemes Cisco Canada CIE	Canada
Cisco Systems Capital (Australia) Pty Limited	Australia
Cisco Systems Capital (India) Private Limited	India
Cisco Systems Capital (Korea) Limited	Republic of Korea
Cisco Systems Capital (Thailand) Limited	Thailand
Cisco Systems Capital Asia Pte. Ltd.	Singapore
Cisco Systems Capital Canada Co./Les Systemes Cisco Capital Canada CIE	Canada
Cisco Systems Capital China Corporation	China
Cisco Systems Capital Corporation	Nevada
Cisco Systems Capital France SAS	France
Cisco Systems Capital GmbH	Germany
Cisco Systems Capital Italy S.r.l. in Liquidazione	Italy
Cisco Systems Capital K.K.	Japan
Cisco Systems Capital Netherlands B.V.	Netherlands
Cisco Systems Capital SDN. BHD.	Malaysia
Cisco Systems Capital South Africa (Proprietary) Limited	South Africa
Cisco Systems Capital Spain, S.L.	Spain
Cisco Systems Chile S.A.	Chile
Cisco Systems Costa Rica, Sociedad Anonima	Costa Rica
Cisco Systems Croatia Ltd. For Trade	Croatia
Cisco Systems Cyprus Ltd.	Cyprus
Cisco Systems Danmark ApS	Denmark
Cisco Systems de Mexico, S. de R.L. de C.V.	Mexico
Cisco Systems Dominicana, S.R.L.	Dominican Republic
Cisco Systems Ecuador S.A.	Ecuador
Cisco Systems Egypt Ltd.	Egypt
Cisco Systems El Salvador, Ltda. de C.V.	El Salvador
Cisco Systems Estonia OU	Estonia
Cisco Systems Finance International Unlimited Company	Ireland

<u>Subsidiaries</u>	State Or Other Jurisdiction of Incorporation or Organization
Cisco Systems France Sarl	France
Cisco Systems G.K.	Japan
Cisco Systems GmbH	Germany
Cisco Systems Holding GmbH	Germany
Cisco Systems Holdings UK Limited	United Kingdom
Cisco Systems Hungary Ltd. / Cisco Systems Hungary Servicing and Trading Limited Liability Company	Hungary
Cisco Systems International B.V.	Netherlands
Cisco Systems International FZ-LLC	United Arab Emirates
Cisco Systems International Sàrl	Switzerland
Cisco Systems Internetworking (Ireland) Limited	Ireland
Cisco Systems Internetworking d.o.o. Za Marketing, Tehnicke I Druge Usluge Sarajevo	Bosnia and Herzegovina
Cisco Systems Internetworking Iletisim Hizmetleri Limited Sirketi	Turkey
Cisco Systems Island Ehf.	Iceland
Cisco Systems Israel Ltd.	Israel
Cisco Systems Jamaica Limited	Jamaica
Cisco Systems Limited	United Kingdom
Cisco Systems LLC	Oman
Cisco Systems Luxembourg International s.à r.l.	Luxembourg
Cisco Systems Luxembourg s.à r.l.	Luxembourg
Cisco Systems Macedonia DOOEL Skopje	Republic of North Macedonia
Cisco Systems Management B.V.	Netherlands
Cisco Systems Netherlands Holdings B.V.	Netherlands
Cisco Systems New Zealand Limited	New Zealand
Cisco Systems Norway AS	Norway
Cisco Systems Pakistan (Private) Limited	Pakistan
Cisco Systems Panama S. de R.L.	Panama
Cisco Systems Peru S.A.	Peru
Cisco Systems Poland Sp. z o. o.	Poland
Cisco Systems Portugal - Sistemas Informáticos, Sociedade Unipessoal, Limitada	Portugal
Cisco Systems Romania S.r.l.	Romania
Cisco Systems Services B.V.	Netherlands
Cisco Systems Slovakia, spol. s. r.o.	Slovakia
Cisco Systems Taiwan, Ltd.	Taiwan
Cisco Systems Uruguay S.R.L.	Uruguay
Cisco Systems Venezuela, C.A.	Bolivarian Republic of Venezuela
Cisco Systems Vietnam Limited (Cong Ty Trach Nhiem Huu Han Cisco Systems Vietnam)	Vietnam
Cisco Technologies (Beijing) Co., Ltd	China
Cisco Technologies (Thailand) Limited	Thailand
Cisco Technologies New Zealand Limited	New Zealand
Cisco Technologies Philippines, Inc.	Philippines
Cisco Technology (China) Co., Ltd.	China
Cisco Technology and Services (South Africa) (Pty) Ltd.	South Africa
Cisco Technology Bangladesh Ltd.	Bangladesh
Cisco Technology Belgium BVBA	Belgium
Cisco Technology Denmark ApS	Denmark
Cisco Technology Services (Dalian) Co., Ltd.	China
Cisco Technology, Inc.	California
Cisco THV LLC	Delaware
Cisco Tunisia SARL	Tunisia
Cisco Video Technologies France SAS	France

<u>Subsidiaries</u>	State Or Other Jurisdiction of Incorporation or Organization
Cisco WebEx LLC	Delaware
Cisco Worldwide Holdings Ltd.	Bermuda
CliQr Technologies India Pvt Ltd	India
CliQr Technologies LLC	Delaware
CloudLock LLC	Delaware
CloudLock UK Ltd	United Kingdom
Cloupia LLC	California
Cloupia Software Solutions Private Limited	India
Cognitive Security s.r.o.	Czech Republic
CoreOptics LLC	Delaware
CSI BD (Mauritius)	Mauritius
CSI Mauritius Inc.	Mauritius
Digi-Media Vision Limited	United Kingdom
DocumentReady ApS	Denmark
Duo Security UK Limited	United Kingdom
Duo Security, Inc.	Delaware
Ensoft Limited	United Kingdom
ExtendMedia LLC	Delaware
Greenfield Networks Technologies Private Limited	India
Intucell Ltd.	Israel
Jasper International Services LLC	Delaware
Jasper Netherlands B.V.	Netherlands
Jasper Technologies Canada Limited	Canada
Jasper Technologies Limited	United Kingdom
Jasper Technologies LLC	Delaware
Jasper Tecnologia do Brasil Ltda.	Brazil
JouleX GmbH	Germany
JouleX LLC	Delaware
July New Media Solutions and Technologies Private Limited	India
July Systems (Deutschland) GmbH	Germany
July Systems (UK) Limited	United Kingdom
July Systems and Technologies Private Limited	India
July Systems LLC	Delaware
Leaba Semiconductor Ltd.	Israel
Limited Liability Company Cisco Capital CIS	Russian Federation
Limited Liability Company Cisco Innovation Center	Russian Federation
Limited Liability Company Cisco Solutions	Russian Federation
Limited Liability Company Cisco Systems	Russian Federation
Luxtera LLC	Delaware
Memoir Systems India Pvt Ltd	India
Memoir Systems LLC	California
Meraki Japan G.K.	Japan
Meraki Limited	United Kingdom
Meraki LLC	Delaware
Meraki Networks Australia Pty Limited	Australia
Mnemonic Technologies LLC	California
Navini Networks Private Limited	India
NDS Finance Limited	United Kingdom
NDS Group Holdings Limited	Bermuda
NDS Group Limited	United Kingdom

<u>Subsidiaries</u>	State Or Other Jurisdiction of Incorporation or Organization
NDS Sweden AB	Sweden
Neohapsis International LLC	Delaware
Neohapsis LLC	Delaware
Neohapsis Software Private Limited	India
Neohapsis, Inc.	Illinois
News Datacom Limited	United Kingdom
newScale Software Private Limited	India
Observable Networks LLC	Delaware
Pari Networks (India) Private Limited	India
Pari Networks LLC	California
ParStream GmbH	Germany
Pawaa Software Private Limited	India
Perspica LLC	Delaware
Perspica Networks Private Ltd.	India
Portcullis Computer Security Limited	United Kingdom
PT Cisco Systems Indonesia	Indonesia
PT. Cisco Technologies Indonesia	Indonesia
Radiata, Inc.	Delaware
Scansafe Limited	United Kingdom
Scansafe LLC	Delaware
Scansafe Services LLC	Delaware
Scientific-Atlanta, LLC	Georgia
Securent India Private Limited	India
Securent LLC	Delaware
SIA "Cisco Latvia"	Latvia
Singularity Networks LLC	Delaware
Skyport Systems LLC	Delaware
Small Wells Services S.A.	Uruguay
SolveDirect Service Management GmbH	Austria
Sourcefire Limited	United Kingdom
Springpath LLC	Delaware
Starent International LLC	Delaware
Starent Networks (India) Private Limited	India
Starent Networks India Sales and Services Private Limited	India
Starent Networks LLC	Delaware
Tail-f Systems AB	Sweden
Tandberg Asia Pacific Pte. Ltd.	Singapore
Tandberg India Private Limited	India
Tandberg Products UK Limited	United Kingdom
Tandberg Technology (India) Private Limited	India
Tandberg Telecom UK Limited	United Kingdom
Topspin Communication Technologies India Private Limited	India
Tropo (Europe) Limited	United Kingdom
Tropo LLC	Delaware
UAB "Cisco LT"	Lithuania
Ubiquisys Limited	United Kingdom
Viptela International Holding, LLC	Delaware
Viptela Japan GK	Japan
Viptela LLC	Delaware
Viptela Singapore PTE Ltd	Singapore

Subsidiaries

WebEx (China) Software Co., Ltd.

WebEx Asia Limited

WebEx Australia Pty Ltd.

WebEx Communications B.V.

WebEx Communications Deutschland GmbH

WebEx Communications France Sarl

WebEx Communications India Private Limited

WebEx Communications Japan, K.K.

WebEx Communications UK, Ltd.

WebEx Worldwide B.V.

**State Or Other
Jurisdiction of
Incorporation or
Organization**

China

Hong Kong

Australia

Netherlands

Germany

France

India

Japan

United Kingdom

Netherlands

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (Nos. 33-34849, 33-40509, 33-44221, 33-71860, 33-87096, 33-01069, 333-05447, 333-09903, 333-14661, 333-42249, 333-56224, 333-64651, 333-76184, 333-79717, 333-91258, 333-96203, 333-111977, 333-129719, 333-143389, 333-147523, 333-159679, 333-159681, 333-163864, 333-163953, 333-163954, 333-168364, 333-169653, 333-169655, 333-173061, 333-178266, 333-180458, 333-181082, 333-185663, 333-185666, 333-185667, 333-186100, 333-187090, 333-189354, 333-189931, 333-190733, 333-191866, 333-192055, 333-193217, 333-196968, 333-196970, 333-199154, 333-199447, 333-200775, 333-201799, 333-201802, 333-201804, 333-204764, 333-205110, 333-206400, 333-206708, 333-208348, 333-208349, 333-208927, 333-209418, 333-210395, 333-210396, 333-210626, 333-210874, 333-212776, 333-212952, 333-213948, 333-217083, 333-218647, 333-219935, 333-219937, 333-222007, 333-222449, and 333-228814) of Cisco Systems, Inc. of our report dated September 5, 2019 relating to the consolidated financial statements, financial statement schedule, and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PRICEWATERHOUSECOOPERS LLP

San Jose, California
September 5, 2019

**CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER
PURSUANT TO EXCHANGE ACT RULE 13a-14(a)/15d-14(a)
AS ADOPTED PURSUANT TO SECTION 302
OF THE SARBANES-OXLEY ACT OF 2002**

I, Charles H. Robbins, certify that:

1. I have reviewed this annual report on Form 10-K of Cisco Systems, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize, and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: September 5, 2019

/s/ Charles H. Robbins

Charles H. Robbins
Chairman and Chief Executive Officer
(Principal Executive Officer)

**CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER
PURSUANT TO EXCHANGE ACT RULE 13a-14(a)/15d-14(a)
AS ADOPTED PURSUANT TO SECTION 302
OF THE SARBANES-OXLEY ACT OF 2002**

I, Kelly A. Kramer, certify that:

1. I have reviewed this annual report on Form 10-K of Cisco Systems, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize, and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: September 5, 2019

/s/ Kelly A. Kramer

Kelly A. Kramer

**Executive Vice President and Chief Financial Officer
(Principal Financial Officer)**

**CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER
PURSUANT TO 18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO SECTION 906
OF THE SARBANES-OXLEY ACT OF 2002**

I, Charles H. Robbins, do hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

- The Annual Report on Form 10-K of the Company for the fiscal year ended July 27, 2019, as filed with the Securities and Exchange Commission (the “Report”), fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: September 5, 2019

/s/ Charles H. Robbins

Charles H. Robbins
Chairman and Chief Executive Officer
(Principal Executive Officer)

**CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER
PURSUANT TO 18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO SECTION 906
OF THE SARBANES-OXLEY ACT OF 2002**

I, Kelly A. Kramer, do hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

- The Annual Report on Form 10-K of the Company for the fiscal year ended July 27, 2019, as filed with the Securities and Exchange Commission (the “Report”), fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: September 5, 2019

/S/ Kelly A. Kramer

Kelly A. Kramer

**Executive Vice President and Chief Financial Officer
(Principal Financial Officer)**